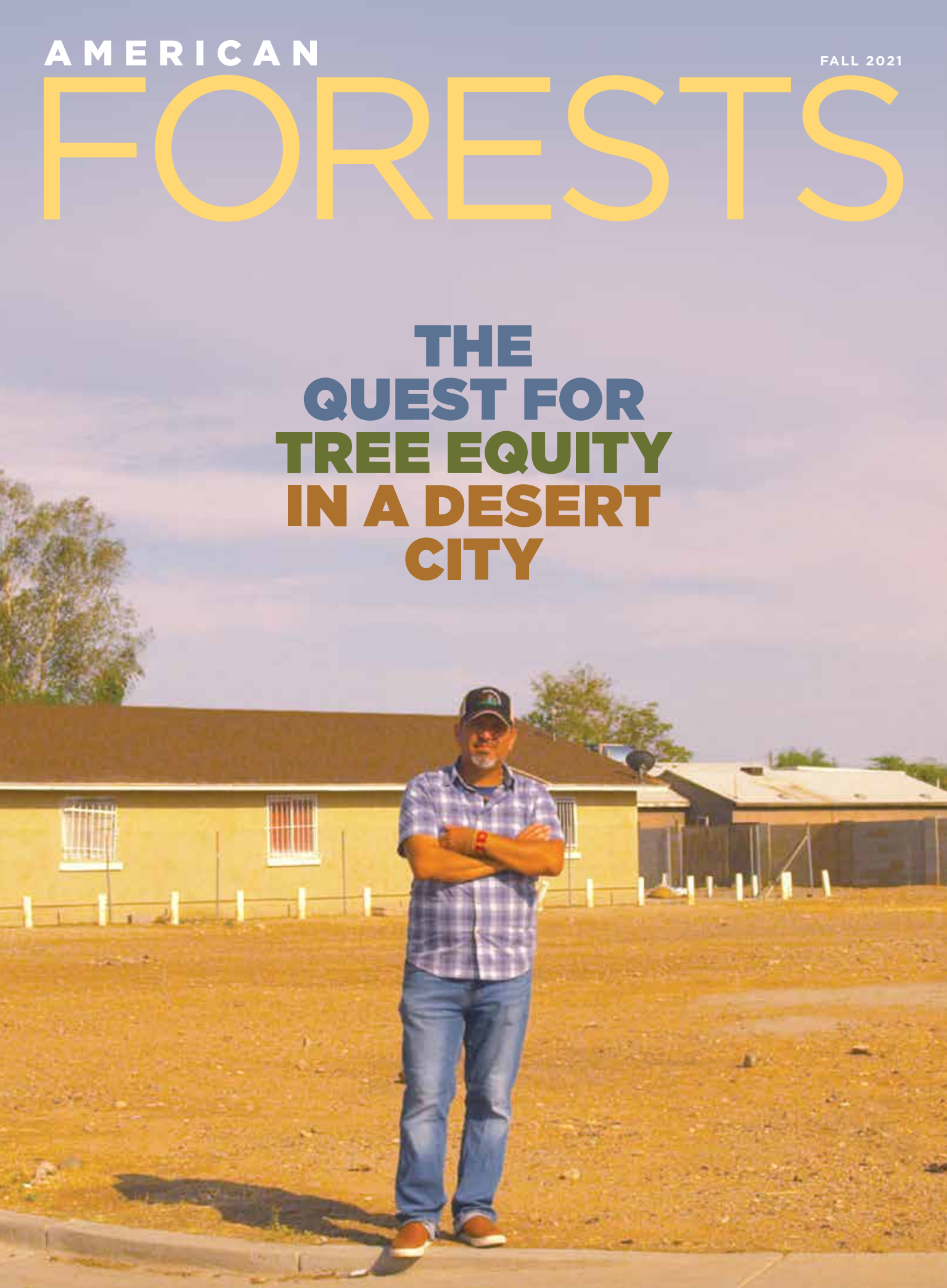
AMERICAN
FORESTS
FALL 2021

THE QUEST FOR TREE EQUITY IN A DESERT CITY



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VOL. 127, NO. 3

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COVER PHOTO: JOEL CLARK / AMERICAN FORESTS

CLOCKWISE FROM TOP: MICHAEL REMKE PHOTOGRAPHY; REI; JOEL CLARK / AMERICAN FORESTS

A lone tree stands along a sidewalk in a Providence, R.I. neighborhood, which has a Tree Equity Score of 60 with only 9% tree canopy.

With no time to lose, we must keep score

BY JAD DALEY

I AM WRITING THIS ARTICLE at a pivotal moment for America. The country is emerging from a global pandemic that has magnified health inequities, especially in terms of income and race. And climate change is moving faster than expected. During one week in June, for example, there were killer heat waves in the cool Pacific Northwest and flooding in the Great Lakes region.

These elevated stakes help explain why American Forests has made a commitment to keeping score — which we hope will lead to more people taking action to advance social equity and slow climate change, in part through the power of trees.

This started with the launch of our Tree Equity Score in June. This tool, the first of its kind, gives a neighborhood-by-neighborhood and municipal-level assessment of tree cover in every urban area across America. It overlays data that shows where the lack of trees most strongly puts people at risk from extreme heat, air pollution and other climate-fueled threats.

Collectively, the scores tell several compelling stories. For instance, on average, the lowest income neighborhoods have 41% less tree cover than high-income neighborhoods, and neighborhoods with a majority of residents of color have 33% less tree cover than majority white neighborhoods. This has life or death consequences, given that neighborhoods with little to no tree cover can be 10 degrees hotter than the city average during the day, and even more at night. In these same places, there is a higher percentage of people with elevated risk factors, such as heat-related illnesses and deaths because of lack of air conditioning.

That's where Tree Equity Score comes in. By naming and framing this dangerous inequity with data and putting it online for all to see and explore, we have brought unprecedented attention to the importance of trees in advancing social equity. This includes a major feature in the New York Times, co-authored by our own Ian Leahy, vice president of urban forestry.

But this tool does much more than just identify the problem. It is as easy to use as a smart phone, making it simple for anyone, from city leaders to city residents, to calculate how many trees are needed for a city to achieve Tree Equity in every neighborhood. They also can see the economic and environmental

EBEN DENTE / AMERICAN FORESTS

benefits that would be generated, such as the tons of air pollution removed annually and number of jobs supported.

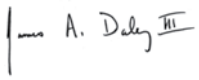
As evidence that Tree Equity Score can catalyze meaningful change, the Phoenix City Council voted in April to achieve Tree Equity in every one of the city's neighborhoods by 2030. Other cities are following suit. And Congressional leaders, such as U.S. Senator Cory Booker (D-N.J.) and U.S. Representative Doris Matsui (D-Calif.), are using it to make the case for unprecedented federal investment in urban trees and forests.

This data-driven approach is not limited to our work in cities. The Reforestation Hub, which we developed in partnership with The Nature Conservancy in January, doesn't generate scores. But it does use cutting-edge scientific analysis of all U.S. land to identify where more trees could be added, from burn scars on national forests to streamside tree buffers on farms. It identifies a total opportunity of 133 million acres, enough land to plant more than 60 billion trees.

This has huge implications for climate change. That many additional trees would increase annual carbon capture in U.S. forests by more than 40%, equivalent to removing the emissions from 72 million cars.

Like Tree Equity Score, the Reforestation Hub is a free and easy-to-use tool meant to catalyze action. It is searchable county-by-county, enabling everyone to explore how our reforestation opportunities overlap with different land ownerships and conservation purposes, such as wildlife habitat and water protection. It also provides a calculation of the additional carbon capture that would be achieved if a given area were reforested. At American Forests, we use it often to advocate for reforestation legislation and make decisions about where to do our reforestation projects.

I encourage you to jump online and check out these powerful new tools. I hope that you will be inspired by our use of data to measurably challenge America and our own organization to meet this moment.



For more news and updates from Jad, follow him on Twitter @JadDaley

To learn more about Tree Equity Score, visit treeequityscore.org, and to learn more about the Reforestation Hub, visit reforestationhub.org.

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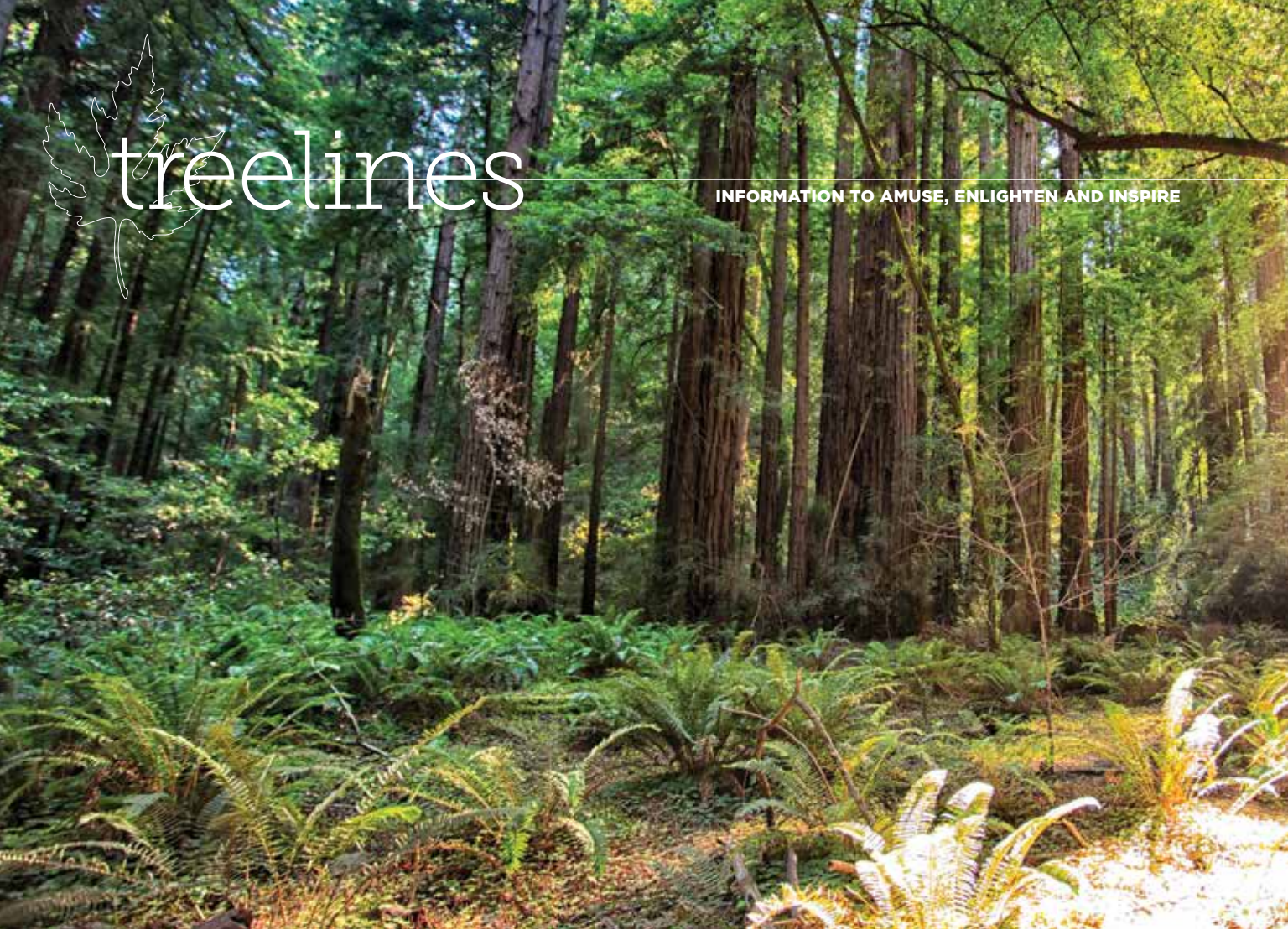


INNOVATION

The solution is under our feet

FORESTS are carbon storage powerhouses. It's easy, quite literally, to see why. All those towering trunks and spreading branches are formed from carbon that trees absorbed from the atmosphere and transformed into wood, roots and leaves.

Forests, however, have a second, often bigger, cache of carbon: the soil. Fifty-eight percent of a forest's carbon is locked away underground. But when it comes to understanding how to protect and restore this enormous carbon stockpile, the science is far from settled.

This lack of understanding means it's hard for forest managers to know how sustainable logging, controlled burns and other actions impact the carbon stored in forest soils. "This is a big bucket where there's a lot of missing information," says Kendall DeLyser, American Forests' senior manager of forests and climate.

For the last few years, American Forests and the Northern Institute of Applied Climate Science, a research branch of the United States Forest Service, have been conducting first-of-its-kind research on forest soil carbon across the country. The research will be used to produce detailed maps of soil carbon — where it's highest and lowest, at risk of being lost, and the opportunities to restore it exist — as well as menus of actions foresters can take to manage the carbon hidden underfoot.

"Forest managers are constantly trying to balance different goals," DeLyser says. "Our tools will help them add in forest soil carbon to those decisions." This research will benefit not only carbon-conscious foresters, but also policymakers, companies and other groups interested in investing in forests as a natural solution to climate change.

American Forests launched this research in 2018 by partnering with

Above: In the soil beneath these trees and plants lies a hidden cache of carbon. How much carbon is contained in forest soil is hard to estimate, but American Forests and the Northern Institute of Applied Climate Science, a research branch of the United States Forest Service, have been conducting first-of-its-kind research to produce detailed, state-by-state maps of soil carbon.

ABOVE: YINGHAI LU; RIGHT: USDA

the Maryland Department of Natural Resources to collect and analyze scientific studies about the state's forest soils. This research identified, among other things, the particular vulnerability of soil carbon on steep slopes and that shallow soils are more at risk of losing carbon than deep ones.

Now, American Forests is expanding this initiative to Oregon, Washington, Minnesota, Michigan, Wisconsin and North Carolina. In the Great Lakes states, American Forests is creating original maps of abandoned mines and pine plantations in need of forest restoration work, neither of which have been comprehensively mapped in this region before. In this particular region, DeLyser explains, physical factors, such as a soil's texture and water retention, play a big role in how much carbon the soil contains. In contrast, in the Pacific Northwest, wildfires are one of the biggest influences on forest carbon, capable of incinerating not only trees but the organic matter stored in soil. Burned carbon returns to the atmosphere as carbon dioxide, where it exacerbates global warming.

For any forester worried that managing forest carbon will add more complexity to an already complex job, DeLyser has good news: "If you're managing your forest sustainably, chances are you're also managing the soil carbon well." In the western U.S., for example, controlled burns are an important tool for restoring healthy forests and staving off extreme wildfires. Compared to the soil-scorching flames of giant, blistering wildfires, controlled burns only singe the upper layer of the forest floor, leading to much smaller, more predictable carbon losses.

If you are looking for a new tool to slow climate change and another argument for sustainable forestry, it turns out the answer was under our feet all along.

"Forest managers are constantly trying to balance different goals. Our tools will help them add in forest soil carbon to those decisions."

— KENDALL DELYSER, SENIOR MANAGER OF FORESTS AND CLIMATE, AMERICAN FORESTS

PLACE-BASED PARTNERSHIPS

Two Arizona cities take major steps toward creating Tree Equity

THE BLAZING HEAT of 2020 is galvanizing action in Arizona. Residents of Phoenix experienced a record-breaking 53 days above 110 degrees that year. In the county where Phoenix is located, annual heat-related deaths reached an all-time high of 323, nearly a 63% increase from eight years earlier.

Heat is common in the desert city of Phoenix. But the problem had become so severe, largely because of climate change, that council members knew they needed to take action. And they knew trees should be part of the solution, given the power of trees to cool down neighborhoods by providing shade.

They also knew that they needed to plant most of the trees in their underserved communities — where the population is mainly low-income Black and Brown people. In Phoenix, as is in most United States cities, trees are sparse in these communities.

In April, the Phoenix City Council became the first local government entity in the U.S. to vote to create a Tree Equity program. Simply put, Tree Equity is about ensuring that all people benefit from everything trees do, like provide shade, filter the air (which is especially important in Phoenix, ranked in 2020 as having the seventh worst air quality in the country) and create opportunities for tree care jobs.

"Trees are a key component of Phoenix's heat mitigation work and offer a multitude of benefits," said Phoenix Mayor Kate Gallego. "Situated in the Sonoran Desert, it is crucial that expansion of our tree canopy prioritizes heat-vulnerable neighborhoods and aligns with our water conservation efforts. We are proud to partner with American Forests to implement data-driven, equitable tree planting that is appropriate for our unique environment."

American Forests is working with Phoenix to create its Tree Equity program, which the council funded at $1.5 million. So is the Phoenix Metro Urban Forestry Roundtable, a coalition of more than 40 entities that is led by American Forests, the Arizona Sustainability Alliance and the City of Phoenix.

Just two hours south of Phoenix, plans to create Tree Equity also are taking shape. Tree Equity Score, developed by American Forests, is now the primary tool used by the City of Tucson to make decisions on where and how much to invest in trees and other green infrastructure. The tool generates Tree Equity scores for urbanized neighborhoods in the U.S. Each score is an indicator of whether the neighborhood has enough trees so all people experience the health, economic and other benefits that trees provide. Tucson, Ariz., is the first city in the U.S. to factor the scores into its decision making.

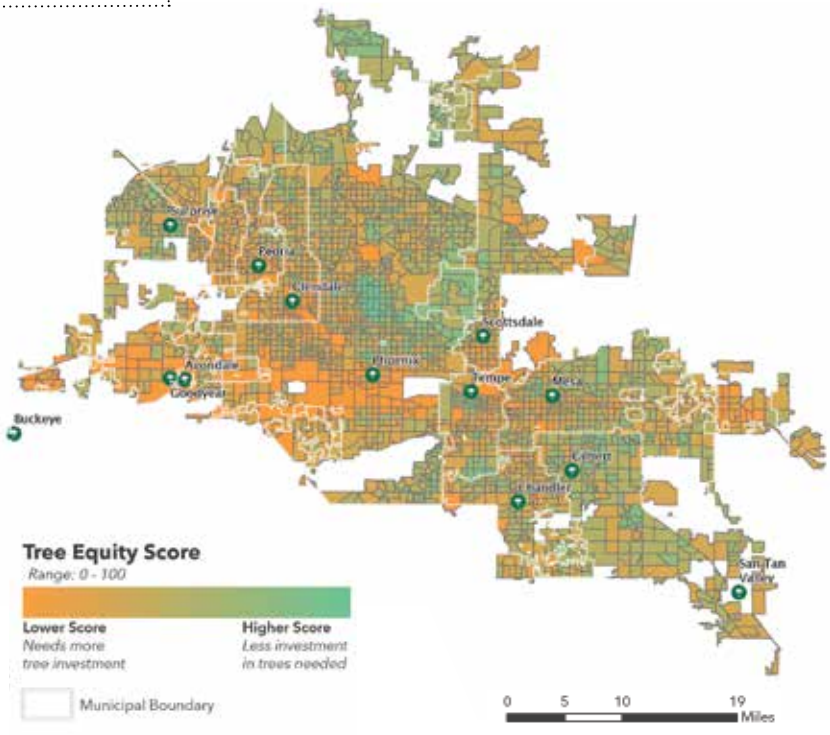
"We will not have a city if we don't deal with climate change and if

RIGHT: ADOBE STOCK

TREE EQUITY SCORE

Maricopa County

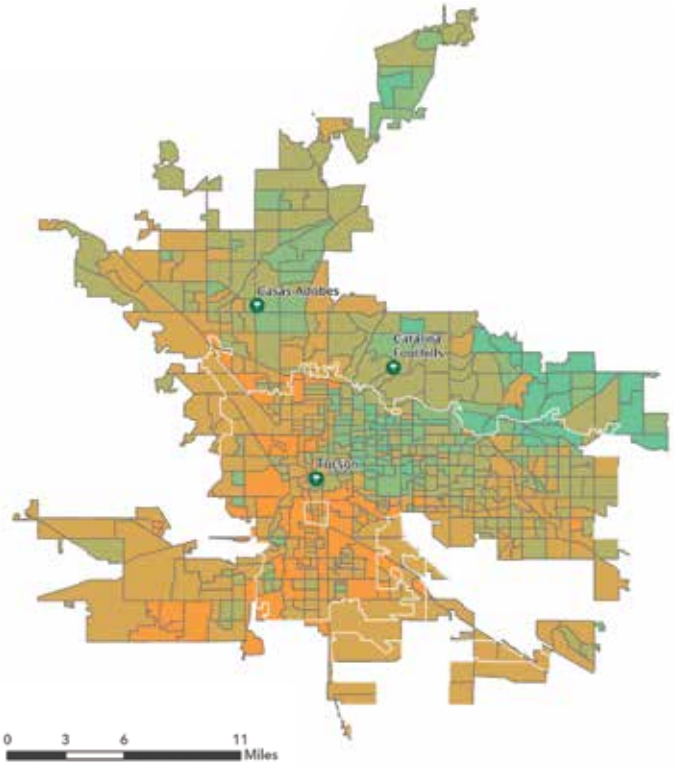
AVONDALE-GOODYEAR & PHOENIX-MESA URBANIZED AREAS



Above: In April, the Phoenix City Council became the first local government entity in the U.S. to vote to create a Tree Equity program. Below: These two maps represent the Tree Equity Scores by neighborhood for Phoenix in Maricopa County and Tuscon in Pima County. Greener areas have a higher Tree Equity Score, and less green/orange areas have a lower score.

Tucson/Pima County

TUCSON URBANIZED AREA



RIGHT AND FACING PAGE: PAGE 33 STUDIO / AMERICAN FORESTS

we don't apply an equity lens when thinking about it," says Tucson Mayor Regina Romero, noting that a map of heat islands in her city is the same as a map of low-income communities. "Communities of color and low-income communities are on the frontline of climate change. As we address climate change, we need to acknowledge historical and systemic inequities and center the voices of frontline communities."

Under the leadership of Mayor Romero, the city has set a goal of planting 1 million trees by 2030, which would take its tree canopy from 8% to 15%. The trees will be funded, in part, through a fee charged for each gallon of water used in the city. City leaders hope that trees will help keep the desert city cool and absorb water from heavy storms. The city will focus on planting the right kinds of trees (e.g., drought-resistant trees) in the right places — most notably, underserved communities.

With leadership from cities like Tucson and Phoenix, America is well on its way to being a country with Tree Equity from coast to coast.

MOVEMENT BUILDING

Planting "Laudato trees" for climate justice

TREES NOURISH OUR MINDS and our souls. They provide physical gifts as well, protecting us from heat, purifying our air, regulating our climate, cleaning our water and giving us food. This natural bounty requires the planting and care of trees and, more broadly, forests. But the challenge we face in doing so is ensuring all people receive these nature-based benefits. The Catholic Church is responding by making a commitment to, in partnership with American Forests, plant 100 million trees through sacramental plantings and charitable donations by 2030 as part of the Laudato Tree initiative.

A defining feature of Catholicism is its sacramental worldview which, according to the Coming Home Network, sees all material reality as a conduit of divinity embodied in nature. In this case, people of religious faith are coming together to plant trees in neighborhoods, parks and on parish grounds using techniques that help them experience this mystery directly. Each tree planted in both Africa and the United States under the initiative will be called a "Laudato tree," meaning it was planted by someone seeking to experience God through caring for nature.

In the U.S., American Forests will help the Catholic Church achieve this ambitious planting goal in part by supporting frontline community engagement and creating tree nurseries in America's cities. In doing so, the environmental and economic benefits of planting and growing trees will be experienced by those most affected by climate change. Also, American Forests will encourage Catholics in America to plant, or help others plant, at least two Laudato trees particularly where our Tree Equity Score analysis has found they are needed across cities in the U.S. Cities will achieve Tree Equity when everyone can experience the benefits trees provide, regardless of race, income or location. In addition, American Forests will work with the Catholic Church to solicit financial support for the planting of millions of trees in the more rural Great Green Wall in Africa — a nearly 5,000-mile wall of trees in the Sahel region of Africa, one of the poorest places on the planet.

"Through its profound sacramental worldview," says Ian Leahy, vice president of urban forestry at American Forests, "the Catholic Church is uniquely positioned to not only create ecological transformation through this initiative but simultaneously spur a spiritual awakening at a critical time in human history."

The Laudato Tree movement was inspired by Pope Francis' encyclical letter, Laudato Sì: On Care for Our Common Home, which calls on humanity to care for our environment, the climate and those most affected by climate change impacts. The purpose of the Laudato Tree initiative is to build a movement of people who care for nature, our common home. This effort will increase food security, restore degraded lands, slow climate change and create job opportunities that advance economic and social justice.

LEFT: ARTHUR O'LEARY; RIGHT: RAWPIXEL.COM / SHUTTERSTOCK

Left: Trees have long been a source of mental and spiritual nourishment for those who seek solace in nature.
Above: Each tree planted under the initiative will be called a "Laudato tree," meaning it was planted by someone seeking to experience God through caring for nature.

DONOR PROFILE

Family foundation working to boost nursery capacity

PAUL ROSSETTI was working with a company that uses drones to reforest after wildfires when he learned a troubling fact: tree nurseries in the United States don't produce nearly enough seedlings to reforest at the scale many believe is needed to make a profound difference in mitigating climate change.

So, when he found out that American Forests was helping conduct a comprehensive study of the problem — and detailed solutions for fixing it — he saw a chance to do something. His family foundation, the Paul and June Rossetti Foundation, helped fund the revealing study and the solutions guide for policy makers.

The study, co-authored by 18 scientists and forestry professionals, found that U.S. nurseries would have to more than double their seedling production to realize even half of the potential of forests to fight climate change, create jobs and recover from increasingly extreme wildfires. The March 2021 study was the most comprehensive yet to examine the barriers nurseries face to ramping up.

The scope of the foundation's impact would have surprised Rossetti four years ago, when he left the world of private equity to create a small foundation to address climate change.

He and his wife, June, and their three daughters homed in on supporting natural solutions, such as reforestation and sustainable agriculture. The Rossettis wanted to keep their work close to home, funding local and state efforts, including a project mapping all natural, climate-related opportunities in their home state of Colorado.

"Being in Colorado, we wanted to work in areas relevant to our community, where we can know the people and feel and touch the problems and the impact," Rossetti says.

But the need for a nationwide study of the reforestation pipeline prompted the Rossettis to seriously broaden the foundation's reach.

"I think the family foundations have got to fund these kinds of things because institutional capital doesn't do that," Rossetti says.

Up next for the foundation: working with American Forests and others to devise ways of driving private investment into building nursery capacity and scaling up reforestation to help mitigate climate change.

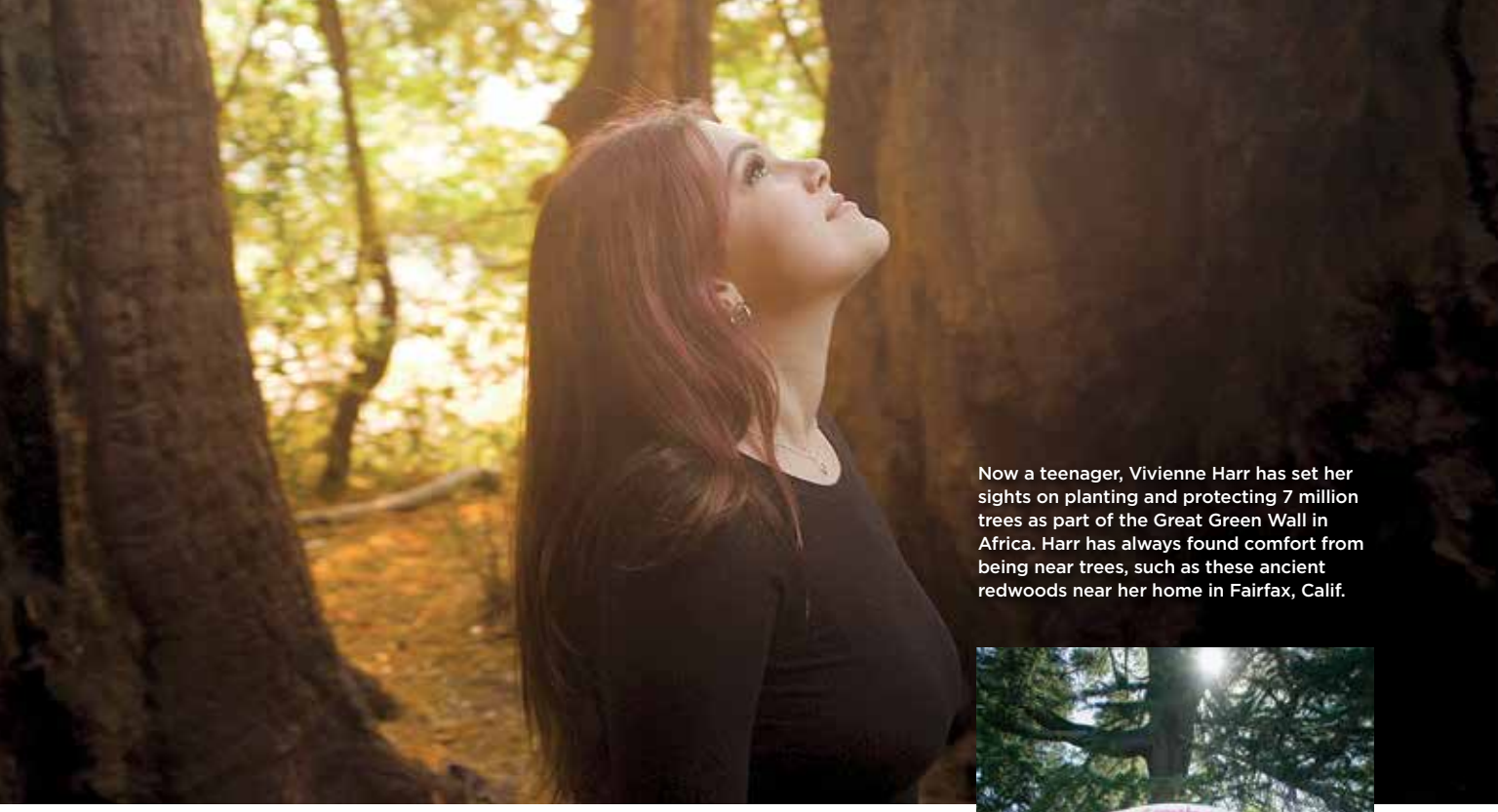
"Tackling climate change will require large-scale and broad-based action. But we won't be successful if we don't fully understand the barriers and opportunities in front of us," says Eric Sprague, vice president of forest restoration for American Forests. "Investments like the one from the Paul and June Rossetti Foundation are important to providing that clarity and to scaling the funding and policies to meet the moment."

"I think the family foundations have got to fund these kinds of things because institutional capital doesn't do that."

— PAUL ROSSETTI, CHAIRMAN, THE PAUL AND JUNE ROSSETTI FOUNDATION

Above: Here, Paul and June Rossetti are pictured at the Betty Ford Alpine Gardens in Vail, Colo., where June is a trustee. Right: U.S. nurseries, like the L.A. Moran Reforestation Center in Davis, Calif. pictured here, would have to more than double their seedling production to realize even half of the potential of forests to fight climate change, create jobs and recover from increasingly extreme wildfires.

ABOVE: COURTESY OF PAUL ROSSETTI; RIGHT: LUCIANE COLETTI / AMERICAN FORESTS



Now a teenager, Vivienne Harr has set her sights on planting and protecting 7 million trees as part of the Great Green Wall in Africa. Harr has always found comfort from being near trees, such as these ancient redwoods near her home in Fairfax, Calif.

YOUTH PROFILE

Young advocate joins forces with Catholic Church in fight against climate change

YOU MAY REMEMBER her as the 8-year-old who made headlines selling lemonade to help rescue children from slavery. Her mantra, "You don't have to be big to change the world," took fire on social media and earned her a spot ringing the bell of the New York Stock Exchange the day Twitter went public.

These days, Vivienne Harr is hoping her message to stand up for what you believe in will inspire other youths worried about climate change to join her in an audacious mission: to plant and protect 7 million trees across the width of Africa to create what is being called the Great Green Wall.

"If that continent is healthy, it's going to make the whole world healthy," says Harr, who at 17 is the chief executive officer of the youth-led movement Laudato Tree.

The Great Green Wall is an African-led initiative to plant and preserve a 10-mile-wide wall of trees that stretches nearly 5,000 miles across the semi-arid Sahel region. The greening of such a wide swath of land is meant to hold back the sprawling Sahara to the north and slow desertification.

"I hate the feeling of being hot and having no shade," says Harr, who lives in the San Francisco Bay area. "I was reading about the people in the Sahel, and it's like that for them all the time. They have no trees and no water."

The effort resonated with Harr, who, for as long as she can remember, has sought peace and play beneath the enormous flowering catalpa tree in her front yard in Marin County, Calif.

The Laudato Tree movement was founded by Irish producer and author Don Mullan, who was inspired by Pope Francis's Laudato Sì Challenge to the world to "care for our common home." After seeing Harr speak at the Vatican, Mullan asked her to become the movement's spokesperson last year.

Laudato Tree recently partnered with American Forests to engage Catholics across America in planting Laudato trees for the Great Green Wall in Africa,

At age 8, Harr created a lemonade stand to raise $100,000 to free child slaves. Telling people to "give what is in your heart," she exceeded her goal.

delivering Tree Equity in socioeconomically disadvantaged neighborhoods across United States cities, and planting in their own communities and parishes in ways that deepen their relationship to nature. These missions are increasingly important, given the changing climate.

"I am an optimist," Harr says. "I believe that while we are in a difficult position right now, we can still pull it together. We don't have a long time but we still can."

To learn more about the Laudato Tree movement, read "Planting 'Laudato trees' for climate justice" on page 8.

BOTTOM: TIM PORTER; TOP: LAURA CHAMBERLAIN

MOTIVATIONAL MUSINGS

Eric Holthaus
@EricHolthaus

The death toll of the Pacific Northwest heat wave was roughly equal to that of the 1995 heat wave in Chicago, a watershed moment for the environmental justice movement. A generation later, people of color are still disproportionately dying of the heat.

ERIC HOLTHAUS, CLIMATE JOURNALIST, *TWITTER*

"Trees are, quite simply, the most effective strategy, technology, we have to guard against heat in cities."

BRIAN STONE JR., PROFESSOR OF ENVIRONMENTAL PLANNING AT THE GEORGIA INSTITUTE OF TECHNOLOGY, *NEW YORK TIMES*

"Tree inequity has consequences, and extreme heat and reduction in air and water quality, as well as the lack of ecosystem benefits means reduced health and general well-being... That's what we're trying to change."

CHRIS DAVID, VICE PRESIDENT OF GIS AND DATA SCIENCE AT AMERICAN FORESTS, *BLOOMBERG*

"Humanity will have to use every tool available to have a shot at reversing climate change. Forests and farms could play a big role in that effort, if the people who manage those lands had the right incentives."

NATHANAEL JOHNSON AND YSABELLE KEMPE, STAFF WRITER AND EDITORIAL INTERN (RESPECTIVELY), GRIST

"It's no surprise that the pandemic has dominated social conversations over the last year. What is worrying though is that even while many people took solace in nature in the early days of the pandemic, there is very little appreciation of nature's crucial role in our own health and economic stability, or the links between pandemics and the destruction of nature."

MEG GOLDTHWAITE, CHIEF MARKETING AND COMMUNICATIONS OFFICER AT THE NATURE CONSERVANCY, *NATURE.ORG*

Justin Adams
@JustinCMAdams

Lack of #TreeEquity is another sign of unequal impacts of #ClimateChange that hit the poorest and most vulnerable people hardest not only in the US but all around the world - there is no solution to #ClimateCrisis without delivering more #EnvironmentalJustice.

JUSTIN ADAMS, EXECUTIVE DIRECTOR OF TROPICAL FOREST ALLIANCE AND 1.ORG HOSTED BY THE WORLD ECONOMIC FORUM, *TWITTER*

Lack of funding is the number one reason why private individuals and entities do not manage their forests in a way that will lead to capturing and storing a lot of carbon.

ALEKSANDRENKO ANASTASIYA / ADOBE STOCK

WASHINGTON OUTLOOK

New legislation to help support private landowners, slowing climate change in the process

WHEN WE GO TO A FOREST to hike, bike or fish, it's usually a forest that is owned by the government. But most forestland — 60% — in the United States is privately-owned, often by a family, company or nonprofit organization. And although those forests are usually off limits to the public, we benefit from them in other ways. Most notably, the trees and soil in them help slow climate change. If managed properly, privately-owned forests could capture and store 35% (up from 13%) of the carbon dioxide emissions needed for the U.S. to reach its 2030 emissions reduction goal.

But managing a forest well takes money, which many private forestland owners do not have. Money to collect seedlings for climate-resilient trees. Or money to buy the equipment needed to harvest wood in an environmentally friendly way. Lack of funding is the number one reason why private individuals and entities do not manage their forests in a way that will lead to capturing and storing a lot of carbon, according to the U.S. Forest Service and others.

One way to address the funding gap is to offer landowners a tax credit, similar to the credit for doing renewable energy projects, like installing solar panels and wind turbines. Renewable energy production in the U.S. doubled between 2005 and 2015, largely because of that tax credit.

A tax credit for private forestland owners is included in the Growing Climate Solutions Act, passed by the Senate in June. It also is part of the agriculture and forestry strategy being created by the U.S. Department of Agriculture, in part because it would help the 21 million private forestland owners, including Black family farmers and others, who have been underserved by the agency's programs.

American Forests offered technical expertise to those creating the legislation and strategy, as we believe in the tremendous power of nature to help slow climate change.

HISTORY

Eighth forest congress to build on historic contributions and focus on women's role in forestry

THE THREATS to America's forests were different 139 years ago than they are today. But the same need still exists — to bring the great minds in forestry together to talk about how to ensure all people, for many generations, can benefit from forests.

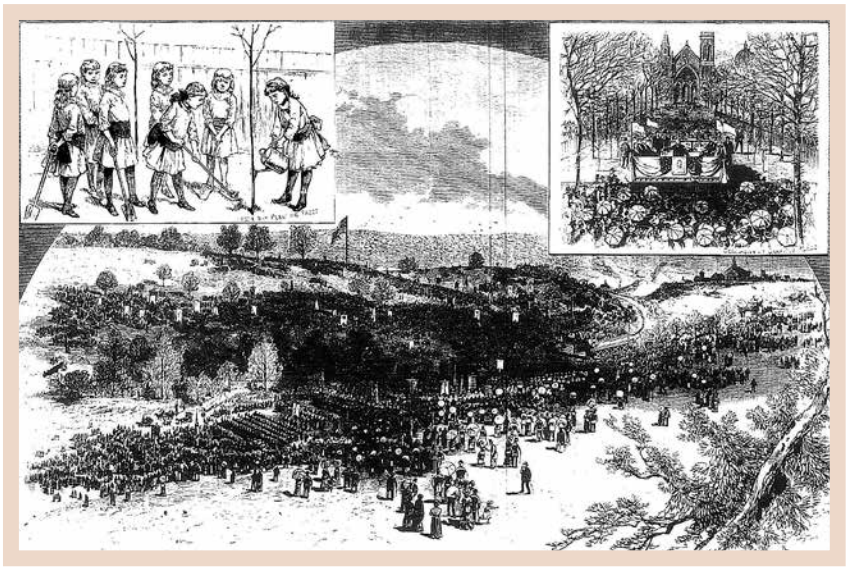
Back then, in 1882, they came together in Cincinnati to talk about how to better manage and govern forests. The discussion was essential, given that the lack of knowledge related to both issues was why our forests were in jeopardy. The venue was the first American Forest Congress, hosted by the American Forestry Association (now known as American Forests).

At the 2022 congress, a female lens will be applied to all of the discussions. The event will be led by women and aptly called the Women's Forest Congress.

In fall of 2022, people will come together for the next forest-themed congress to talk about a new set of problems — such as wildfires, pests and diseases — that are mostly the result of climate change. They'll also discuss trees as a pathway to advancing social equity in cities.

Just as all seven congresses held to date have been structured to embrace the current forest issues of the day, a unique lens has been applied to each one. At the last congress, held in 1974, the focus was welcoming in people — such as owners of small tracts of forest land, leaders from community-based forestry groups and Native Americans — who had not typically attended these events. At the 2022 congress, a female lens will be applied to all of the discussions. The event will be led by women and aptly called the Women's Forest Congress.

W.S. Rosecrans presides over the third American Forest Congress in 1946.



American Forests, then the American Forestry Association, held the first American Forest Congress with a tree planting in Eden Park attended by 50,000 people.

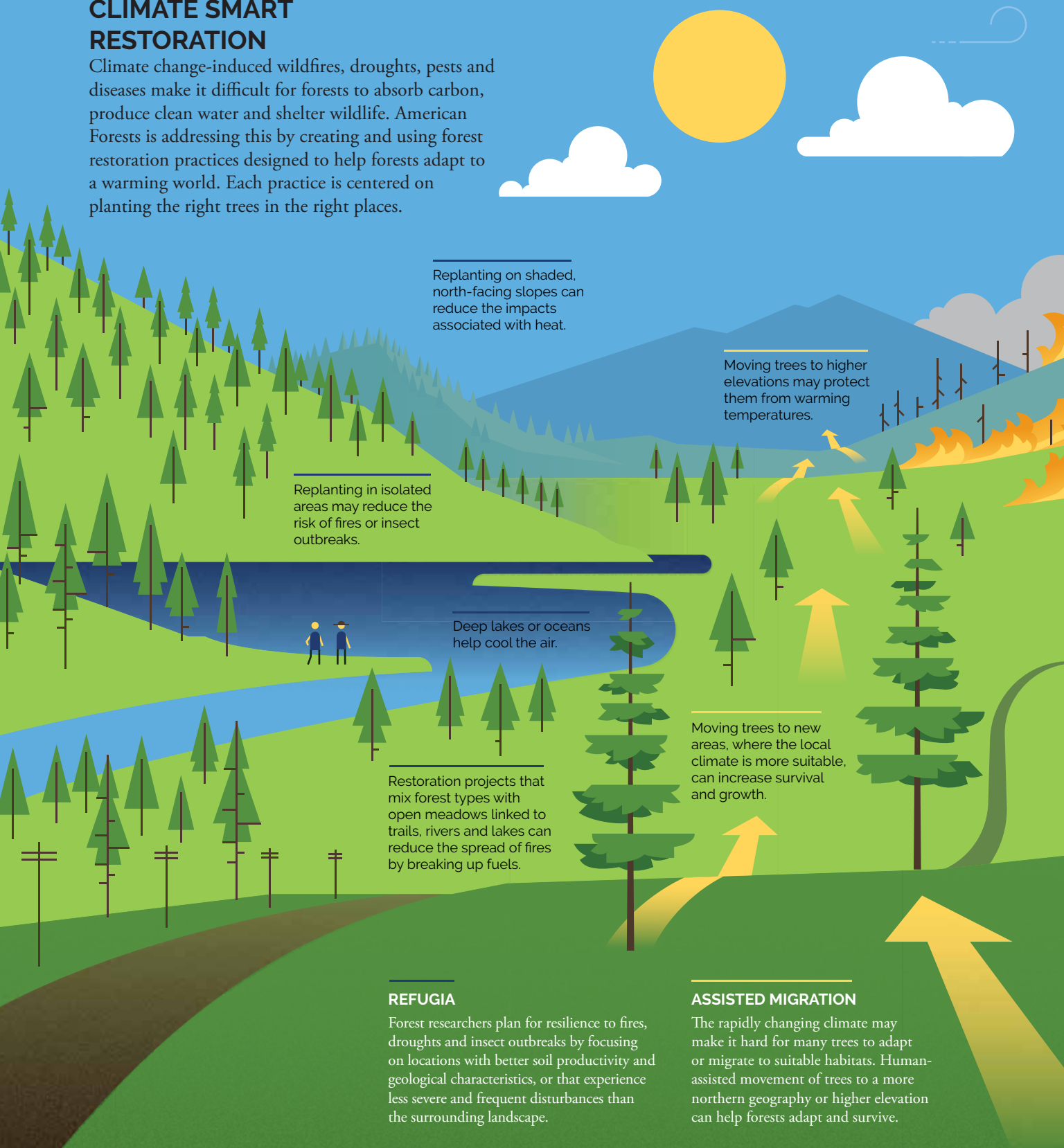
Each of the congresses, all led or co-led by American Forests, have resulted in groundbreaking solutions for our forests. For example, they have informed the creation of the United States Forest Service, the network of national forests that now span nearly 190 million acres and the Civilian Conservation Corps (whose employees helped plant 3 billion trees). We are hopeful that the next congress will lead to similar policies and programs that help shape the quickly growing movement to reforest America.

BOTTOM: PICASA; TOP: AMERICAN FORESTS

THE UNDERSTORY

CLIMATE SMART RESTORATION

Climate change-induced wildfires, droughts, pests and diseases make it difficult for forests to absorb carbon, produce clean water and shelter wildlife. American Forests is addressing this by creating and using forest restoration practices designed to help forests adapt to a warming world. Each practice is centered on planting the right trees in the right places.



REFUGIA

Forest researchers plan for resilience to fires, droughts and insect outbreaks by focusing on locations with better soil productivity and geological characteristics, or that experience less severe and frequent disturbances than the surrounding landscape.

ASSISTED MIGRATION

The rapidly changing climate may make it hard for many trees to adapt or migrate to suitable habitats. Human-assisted movement of trees to a more northern geography or higher elevation can help forests adapt and survive.

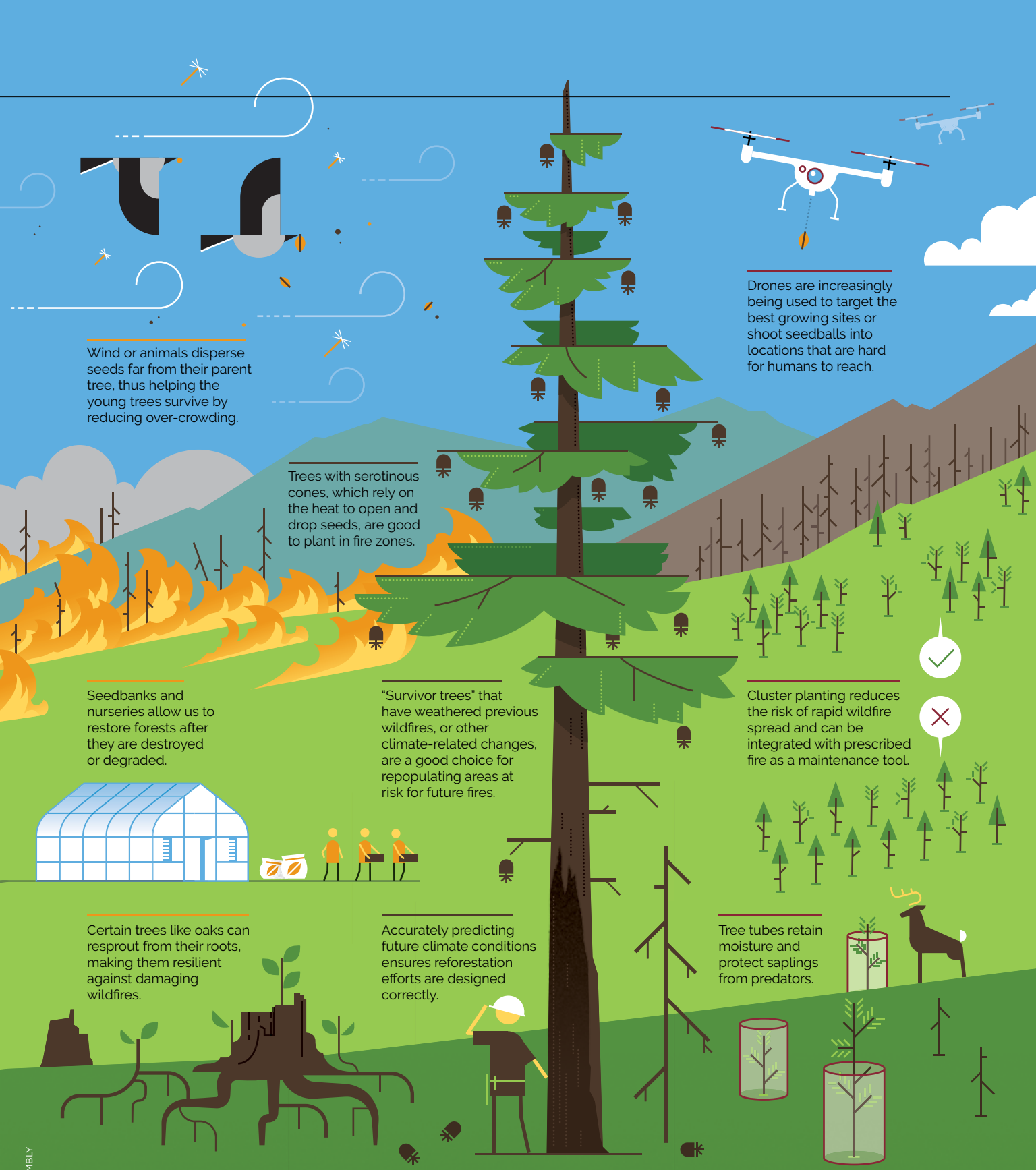


ILLUSTRATION BY MATTHEW TWOMBLY

NATURAL REGENERATION

Selecting diverse tree species with different regeneration mechanisms and genetics will help forests be more prepared to grow back after future disturbances such as wildfires, insect outbreaks and droughts.

RIGHT TREE/RIGHT PLACE

Selecting the right trees for current and future climate scenarios is key to the long-term health of the forest. This can be done by having a good stock of seeds, prioritizing survivor trees and predicting future environmental conditions.

TREE PLANTING TECHNIQUES

A variety of planting techniques can ensure trees survive to maturity and create a healthy and biodiverse ecosystem better suited to survive the next threat.

FOREST FOOTNOTES

Experimental orchard planted to bring back the extinct American chestnut

An estimated 3 to 4 billion American chestnut trees were destroyed in the first half of the 20th century by chestnut blight.

SINCE THE 1800s, the American chestnut tree has struggled to survive. Ink disease followed by chestnut blight killed billions of trees from Appalachia to Michigan. Though some are still scattered across the country, the chestnut has been functionally extinct for 70 years.

But scientists in Maine are hoping to bring back the keystone species and create the "biggest ecological turnaround in North American history." Thomas Klak, professor of environmental studies at the University of New England, recently helped develop a strain of American chestnut resistant to the blight that has decimated their numbers. And in May 2021, the federal government approved a plan to plant hundreds of these chestnut seedlings in an experimental orchard in Cape Elizabeth, Maine.

In a few years, the genetically engendered chestnuts will be introduced to the fungus that decimated its ancestors, and until then, the jury is out on if these trees will ever make their way into the wild.

Trees can cool down a city block by as much as 10 degrees. Understanding how temperatures vary from block to block through heat mapping can help cities determine the blocks with the highest need for trees.

Nation's largest heat-mapping project planned for Virginia

COLLEGES AND UNIVERSITIES across 10 Virginia cities are coming together to conduct the first large-scale statewide heat-mapping project to understand how temperatures vary from city block to city block. During Summer 2021, students and volunteers recorded ambient air temperature and relative humidity data from locations with plenty of trees and vegetation, as well as in industrial areas and locations with a lot of asphalt in cities like Arlington, Richmond, Salem and Virginia Beach. The Virginia Foundation for Independent Colleges has organized the project, and colleges will use the data in courses and research projects. Urban forestry professionals can also use the data to help identify places that need more tree cover. This level of analysis can be useful to cities as they grow and make decisions about where to plant more trees and where to place cooling centers. The project also aims to foster relationships between schools and residents, community leaders and local government.

TOP: GREAT SMOKY MOUNTAINS NATIONAL PARK; BOTTOM: LUNATICTM / SHUTTERSTOCK

Mushrooms provide natural method for cleaning up hazardous waste

WHEN WILDFIRES ROAR THROUGH A COMMUNITY, they not only leave death and destruction in their wake, they also leave hazardous waste. Charred paint, pesticides, cleaning products, electronics, pressure-treated wood and propane tanks deposit a range of pollutants in the soil — including arsenic, asbestos, copper, hexavalent chromium, lead and zinc. Runoff from this toxic ash could pollute local creeks, impacting water supplies and wildlife.

Over the past several years, forest advocates have championed "mycoremediation," an experimental bioremediation technique that uses mushrooms to clean up hazardous waste, harnessing their natural ability to use enzymes to break down foreign substances.

Mushrooms possess a natural ability to use enzymes to break down foreign substances.

Proponents say it's a natural — and potentially cheaper — alternative to the "scrape-and-burn" approach to environmental cleanup, which involves digging up contaminated soil and incinerating it, often negatively impacting potentially fertile topsoil. While more testing and research is needed, the coming fire seasons will, unfortunately, provide plenty of opportunity to do so.

TOP: LAURA YOUNG; BOTTOM: PHEELINGS MEDIA / SHUTTERSTOCK

Stillmeadow PeacePark will serve as a place for people, especially those of faith, to connect with nature.

Neglected forestland turned "Peace Park"

FOR YEARS, 10 acres of ignored Baltimore forestland was used for illegal dumping until one pastor saw it for what it could be: an oasis of greenspace for worship and fellowship. Pastor Michael Martin of Stillmeadow Community Fellowship brought together a diverse group of people — worshipers, environmentalists, neighbors and students — to cut down dead trees and pot over 1,000 new trees, between June 2020 and May 2021, to create a nursery. As the new poplar and willow trees grow, organizers believe so will the faith and peace of those who come to enjoy the space for years to come. Ultimately, Stillmeadow hopes to expand the greenspace by planting more trees to help create a healthy urban forest complete with trails, meditation stations and gardens. Stillmeadow PeacePark will serve as a place for people, especially those of faith, to connect with nature.

The Quest for Tree E

One man's journey to help cool Phoenix neighborhoods and advance environmental justice

BY SHANITA RASHEED

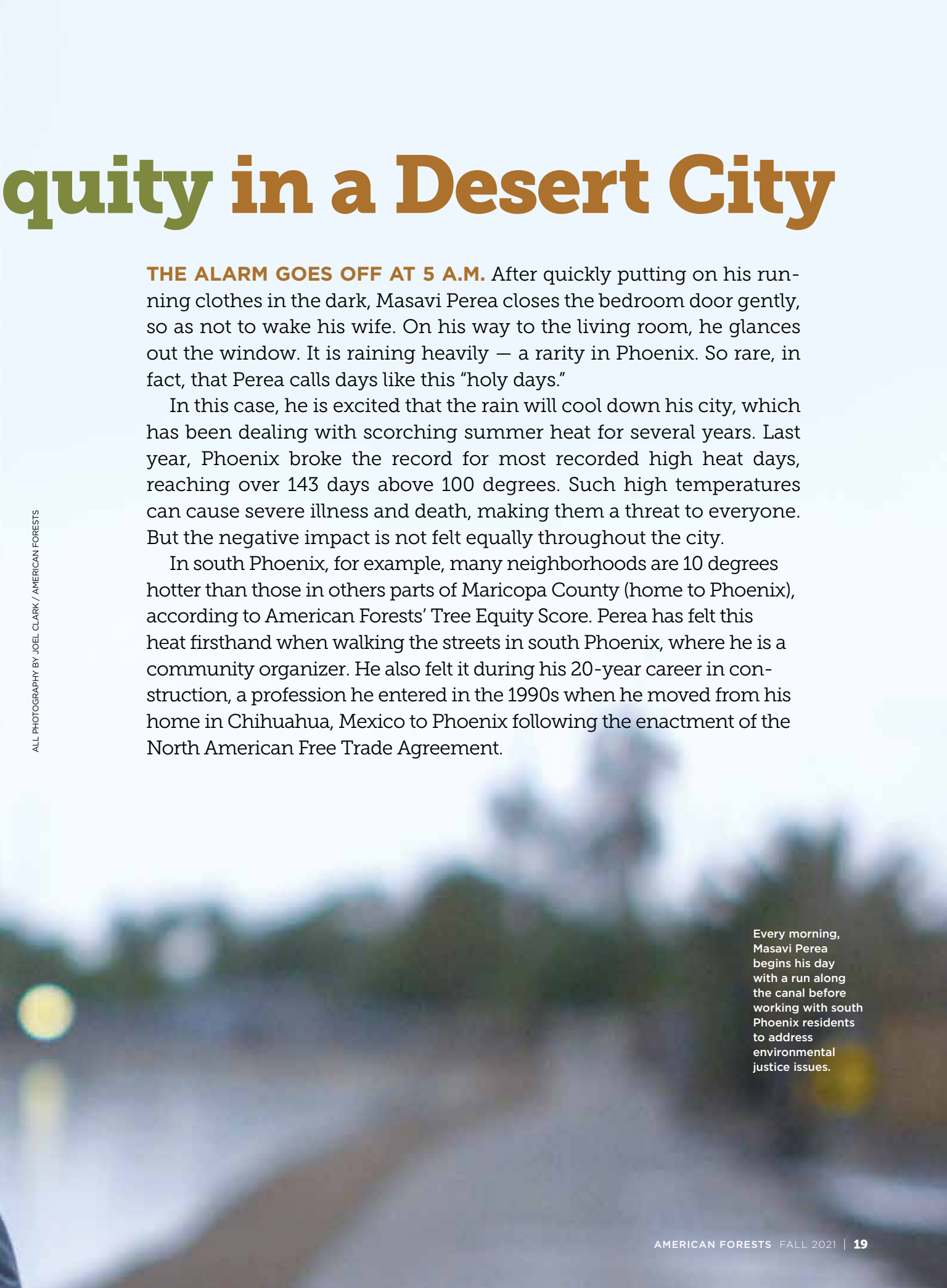
quity in a Desert City

THE ALARM GOES OFF AT 5 A.M. After quickly putting on his running clothes in the dark, Masavi Perea closes the bedroom door gently, so as not to wake his wife. On his way to the living room, he glances out the window. It is raining heavily — a rarity in Phoenix. So rare, in fact, that Perea calls days like this "holy days."

In this case, he is excited that the rain will cool down his city, which has been dealing with scorching summer heat for several years. Last year, Phoenix broke the record for most recorded high heat days, reaching over 143 days above 100 degrees. Such high temperatures can cause severe illness and death, making them a threat to everyone. But the negative impact is not felt equally throughout the city.

In south Phoenix, for example, many neighborhoods are 10 degrees hotter than those in others parts of Maricopa County (home to Phoenix), according to American Forests' Tree Equity Score. Perea has felt this heat firsthand when walking the streets in south Phoenix, where he is a community organizer. He also felt it during his 20-year career in construction, a profession he entered in the 1990s when he moved from his home in Chihuahua, Mexico to Phoenix following the enactment of the North American Free Trade Agreement.

ALL PHOTOGRAPHY BY JOEL CLARK / AMERICAN FORESTS



Every morning, Masavi Perea begins his day with a run along the canal before working with south Phoenix residents to address environmental justice issues.

"At the community level, there is a sense that extreme heat is too large a problem for neighborhoods to tackle, and a general resignation among residents that this is 'just the way it is.'"

—MASAVI PEREA, COMMUNITY ORGANIZER, PHOENIX

"We would start early in the morning to try and beat the sun," he recalls. "But I remember my body feeling so numb because we had to cover every part of ourselves so we wouldn't burn. I had to work through it to provide for my family."

After witnessing people get sick from the heat and receive inadequate care from their employers, Perea joined the "Justice for Roofers Campaign" so he could advocate for the rights of outdoor workers.

A few years later, he realized that what he and others experienced working in the heat was an environmental justice issue. The outdoor labor community in Phoenix is predominantly a migrant community. The people within it often feel like they are invisible to society, which can lead to unfair and unsafe labor conditions.

Perea now helps build heat resilience in communities by advocating for more trees and other greenspaces. He focuses on places where people are living with the side effects of redlining — discrimi-

Left: In 2017, Perea helped lead the creation of urban heat action plans for three Phoenix neighborhoods. He held conversations with residents to create together solutions that would relieve extreme heat.

Below: Creating tree-lined streets — often referred to as "cool corridors" by Phoenix residents — along public transportation routes like this one can provide much needed shade. Trees also provide more cooling than most man-made overhead canopies through transpiration, a natural air-cooling effect that occurs when trees release moisture into the air through their leaves.

natory housing practices in predominately Black and Latinx neighborhoods dating back to the 1930s. Redlining also laid the groundwork for a lack of investment in greenspace — and other resources — in predominately Black and Latinx neighborhoods. That is one of the main reasons why there are fewer trees in those neighborhoods, as well as why those neighborhoods are hotter than whiter and wealthier ones. We now know that trees can cool a neighborhood by as much as 10 degrees.

Perea often comes up against resistance to planting trees. People tell him, "The heat has gotten worse and trees can help, but we live in the desert so maybe it has to be this hot." Perea found the same sentiment in 2017, when he

"I am working to expand urban greenspaces in my community today, so that the next generation can live healthier lives."

—MASAVI PEREA, COMMUNITY ORGANIZER, PHOENIX

Right: Perea plays volleyball with his children at Perry Park in Phoenix.

Below: Perea believes that community organizing is the most effective way to empower and positively impact communities disproportionately affected by extreme heat.

helped create a Heat Action Plan with residents from three Phoenix neighborhoods. Those working on it found that "at the community level, there is a sense that extreme heat is too large a problem for neighborhoods to tackle, and a general resignation among residents that this is 'just the way it is.'"

To inspire people to tackle extreme heat in Phoenix, Perea speaks to residents about how temperatures in their neighborhoods can have an effect on their health. Doing so has led to greater community support for investment in trees because many now see the lack of greenspace as an environmental justice issue, he says.

In one of the projects that Perea works on, community members identify "hot spots" where trees will be planted this fall. Some are also being trained as "community health workers" charged with sharing information about extreme heat and health with their neighbors.

They have their work cut out for them. Phoenix needs to plant and care for 2 million more trees in neighborhoods that do not have enough in order to achieve Tree Equity, in which everyone can reap the benefits trees provide, no matter their income, race or neighborhood, according to Tree Equity Score. The City of Phoenix has already

committed to achieving Tree Equity by 2030. Reliable and accessible data tools, such as Tree Equity Score, will help Perea, other tree advocates and city officials make the case for planting trees in neighborhoods where, for example, families cannot afford to run their air conditioning units 169 days out of the year — the average number of days Phoenix experiences temperatures of 90 degrees or higher.

More days than not, many Phoenix neighborhoods seem deserted because it is simply too hot to come outside.

But on this morning, after the downpour, people emerge from their homes as if they've been eagerly waiting for the rain all along. Perea witnesses more people than usual join him on the canal, running and walking with their families.

And the sight gives him hope. Perea envisions a future where the trees that were planted some 20 or 30 years earlier have grown so much their crowns supply cooling benefits to everyone. He believes the desert can be cool enough for people to live in, if those most affected by extreme heat are engaged in creating nature-based solutions. As he prioritizes the south Phoenix neighborhoods that need more trees today, he is playing a role in the creation of a cooler future for his children and grandchildren.

"I am working to expand urban greenspaces in my community today, so that the next generation can live healthier lives."

Shanita Rasheed serves as American Forests' senior manager of communications for Tree Equity and writes from Washington, D.C.

Left: People living in neighborhoods that do not have enough trees can be more exposed to smog — dangerous air pollution that is intensified under climate change-induced heat waves. Smog can make it difficult to breath, triggering asthma attacks and spiking emergency room visits.

Below: Perea's goal is to bring urgency to environmental justice issues that affect the Latinx community, such as tree cover disparities. He works to form alliances with groups and communities that are not always part of the decision-making process.

SHARING IS CARING

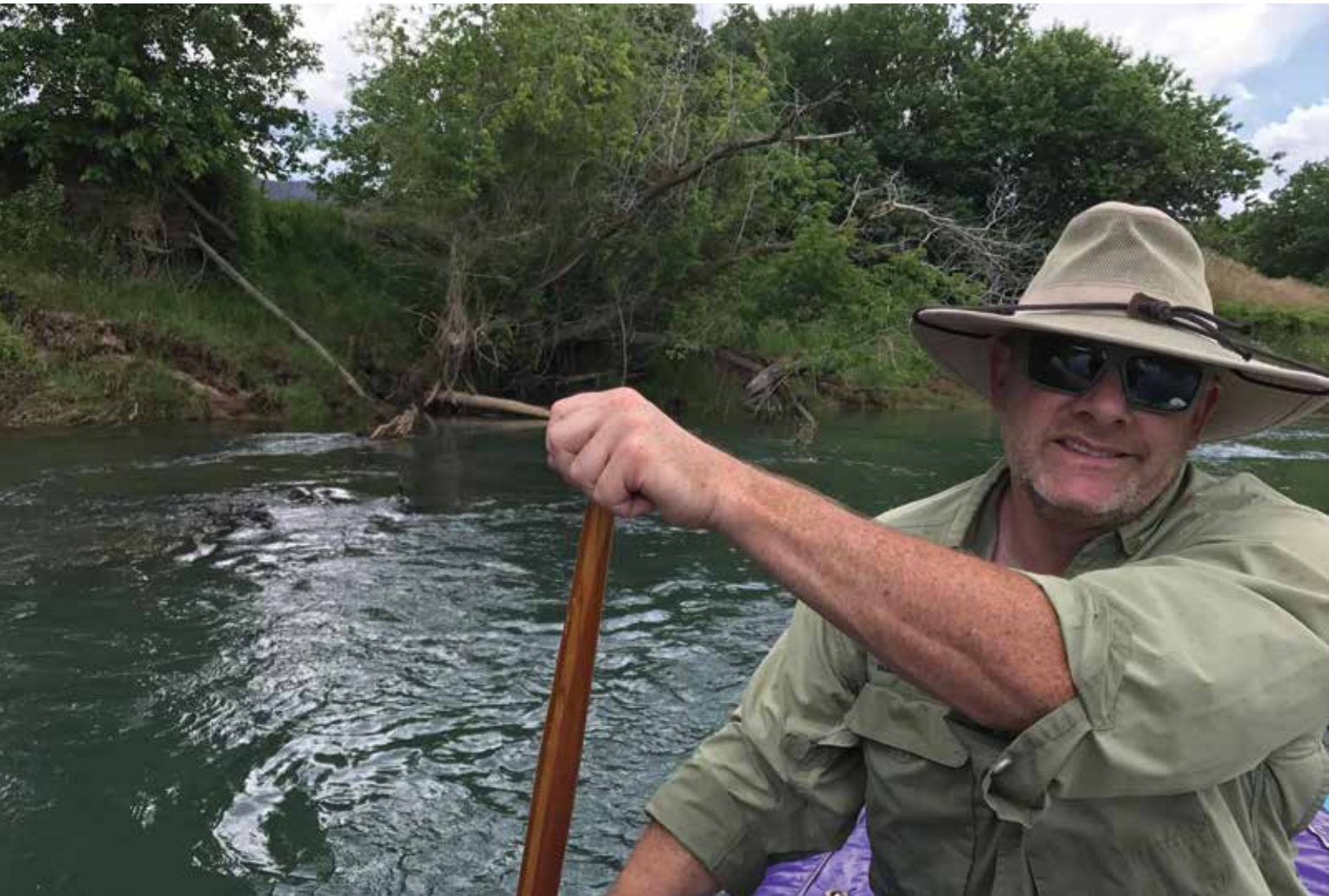
How a new approach to forest management is paying dividends

BY LEE POSTON

AS A RIVER GUIDE on the Rio Grande in Big Bend Texas in the 1990s, Aaron Kimple's senses were always on overload as he paddled through the remote landscape among migratory birds, past fields of wildflowers and millions of buzzing insects. One of those senses, however, was fear. His anxiety was constantly triggered during those heady days on the rapids. "We would boat that river, and we always knew that one of the big constraints was the fact that the Rio Grande didn't flow consistently. And we weren't guaranteed water," he says.

Kimple eventually migrated upriver into the Pagosa Springs region of Southwest Colorado, plying the San Juan River, the Colorado River and sometimes returning to the Rio Grande. He and his wife, Kathy, fell in love with the mountains, rivers, snow and skiing, and moved to Durango in 2000. In Colorado, he found his calling.

ILLUSTRATION BY CHRIS GASH



"Any one group, agency or landowner is not able to fix our forest health problems. Turning to each other, building trust and building projects together, and then finding ways to co-plan, develop, fund and implement bigger projects at a larger scale together for a greater impact — that, to me, is what shared stewardship is about."

—BRIAN KITTLER, SENIOR DIRECTOR OF FOREST RESTORATION, AMERICAN FORESTS

It was the beginning of a career defined by connections — between land, water and people — and a stark realization about what needs to be done to protect them. Kimple is now the director of the Mountain Studies Institute's forest health program, where he oversees watershed and forest health initiatives and facilitates community stakeholder groups.

That facilitation is the crux of his life's mission. His "second job" is coordinator of the Two Watersheds, Three Rivers, Two States (2-3-2) Cohesive Strategy Partnership, a mouthful of a title that belies a simple premise: by working across boundaries, at large scale and with multiple stakeholders, land managers can achieve much more than they could by focusing on individual projects with limited boundaries, size and partners.

"It's just an intriguing endeavor," Kimple says of the origins of the 2-3-2. "We were really beginning this idea that we can bring money from the state side and the federal side, incorporate local and foundational investments, and instead of patchworking our work across the landscape, we can really consolidate it and have a true impact."

This led to working across state lines with New Mexico, on water issues primarily, and on wildfires that burned across borders, including one that jumped the Continental Divide and heavily impacted the Rio Grande watershed.

"When we started recognizing those connections, we said, 'How do we come together to think about this?'" Kimple adds. "Rather than competing, how can we work together to leverage our efforts and truly have that landscape-scale impact?"

That concept is known as shared stewardship, and it's revolutionizing wildfire management, forest and watershed protection, drought control, and the ongoing battle with disease and pest outbreaks across the United States. Instead of focusing on disconnected, individual projects working with limited partners or agencies, shared stewardship actively encourages organizations to join forces and work across state, county or jurisdictional lines.

"Any one group, agency or landowner is not able to fix our forest health problems," says Brian Kittler, senior director of forest restoration at American Forests. "Turning to each other, building trust and building projects together, and then finding ways to co-plan, develop, fund and implement bigger projects at a larger scale together for a greater impact — that, to me, is what shared stewardship is about."

Working together has become increasingly important, given the growing scope of problems devastating large swaths of forest.

Kittler, for example, points to the Western U.S. as a place where a combination of stressors and disturbance patterns across a much larger scale are pushing ecosystems to a tipping point. Widespread pest outbreaks and long-term drought — both linked to climate change — are creating significant tree die-offs, he says.

"And then a large wildfire comes through and burns at very high severity. There's essentially no live cone-bearing trees left because of the beetle outbreak and the drought that killed the trees, so you have large, large areas in some of these landscapes that aren't going to be naturally regenerating."

All of these stressors, when combined with a legacy of fire suppression and uncoordinated forest management, have led to critical conditions in many forests and watersheds.

SOMETHING OLD, SOMETHING NEW

Shared stewardship is a relatively new term. A 2018 vision and policy statement by former U.S. Forest Service (USFS) Chief Vicki Christiansen helped brand the term and bring it to a much wider audience. But the idea and practices behind it have been around for decades and practiced in many parts of the world. In the grasslands of southern Nepal and northern India, the Terai Arc Landscape links 16 protected areas into a contiguous habitat for tigers, rhinos and elephants. Community forest user groups are empowered to help manage forest corridors between the protected areas while also benefiting from tourism income and livelihood improvement projects.

In the U.S., the USFS has long worked with tribes, states, communities and collaborative groups on reforestation and restoration. New policies, evolving science and strategic shifts

Top: Shared stewardship is practiced in many parts of the world. In the Khata Corridor bordering Bardia National Park in western Nepal's Terai Arc Landscape, the grasslands are sustainably managed by a Community Co-ordination Forest Committee (CFCC). The land was previously barren due to over-grazing, but has now been regenerated through the CFCC, which was established with the support of World Wildlife Fund and allows communities to benefit from the land while also restoring forest corridors for wildlife. The Khata Corridor connects Bardia National Park in Nepal with Katerniaghat Wildlife Sanctuary in India.

Bottom: Aaron Kimple, a leading proponent of shared stewardship, paddling the Animas River in Colorado.

BOTTOM: COURTESY OF AARON KIMPLE; TOP: © SIMON DE TREY-WHITE / WWF-UK

toward more robust partnerships with communities and stakeholders have helped push shared stewardship to the forefront.

One of the most important policies is the Good Neighbor Authority, which since 2001 has increasingly allowed the USFS and Bureau of Land Management to work on land management projects with states, counties and Indian tribes, including those that cross boundaries. Equally important are stewardship contracting and agreement authorities, which open the door to a much wider range of local and rural project partners, such as nonprofits, community based organizations, local governments and rural contractors.

Following Christiansen's 2018 statement and policy release, the USFS began a major push to establish formal Shared Stewardship Agreements and put them into action. The Agency has now signed agreements with 47 states, the District of Columbia and three territories. Some agreements are with individual states while others are with collective entities, such as the Western Governors' Association and the states of the Chesapeake Bay Watershed.

The agreements are specific to each state, conditions on the ground and the threats and priorities they face. However, they all focus on a collaborative approach to land management that addresses challenges and opportunities that cross boundaries. Partners share decisions and goal setting, and active management by non-federal partners is encouraged to maximize the scale and impact of the work.

In a May 2019 speech in Silverdale, Wash., Christiansen summarized the reason for the USFS's commitment to shared stewardship. "The scale of our work has to match the scale of the risks and the problems we face," she said.

Jacqueline Buchanan is keenly aware of that scale. As the USFS deputy regional forester for the Rocky Mountain Region, she notes that "land management challenges like wildfires, insects and drought recognize no boundaries; they impact all jurisdictions." Buchanan works closely with the Rocky Mountain Restoration Initiative, a collaboration between the USFS, the National Wild Turkey Federation and more than 40 natural resource leaders from across Colorado. In its first year, the initiative worked with more than 125 partners to improve forest conditions on over 24,000 acres of public and private lands in Southwest Colorado.

Patrick and Katie Banks opened Foolhardy Hill campground thanks to an entrepreneurial challenge grant from the Massachusetts Office of Energy and Environmental Affairs. They worked with a startup accelerator called Lever to develop their pitch — an example of the kind of public/private partnerships that thrive because of shared stewardship.

LEFT: ERIC KORENMAN

NOT JUST A WESTERN ISSUE

In the Eastern U.S., wildfires may be less of a risk, but top of mind are pest outbreaks from invasive moths and hemlock woody adelgid, along with disease outbreaks and climate change impacts. In the rural, heavily forested northwest corner of Massachusetts, the Mohawk Trail Woodlands Partnership is working to create natural resource-based economic development opportunities aligned with the state's shared stewardship agreement. The Partnership is driven by the residents of Western Franklin and Northern Berkshire Counties, and centered on a shared desire to conserve the region's forests and rural way of life, while improving the region's financial sustainability.

This region is among Massachusetts' most economically distressed, with low wages, population decline and financial instability. However, it has high potential for tourism, sustainable forestry and other development opportunities, says Kurt Gaertner, assistant secretary for environmental policy in the Massachusetts Executive Office of Energy and Environmental Affairs (EEA). "Part of the reason why we have a shared stewardship agreement with the USFS, why 17 of the 21 communities in the region have now voted to

TIMELINE OF SHARED STEWARDSHIP

1908 – 1935

- USDA Forest Service (USFS) expands beyond National Forest System to support states and private lands.
- Clarke-McNary Act authorizes assistance to states for wildfire control and post-fire reforestation.

1947

Forest Pest Control Act gives USFS authority to detect and control forest pests across ownerships, not just on national forests.

1978

Cooperative Forestry Assistance Act and related laws strengthen cooperation between USFS and state forestry agencies in providing stewardship assistance to private landowners.

1995 – 2000

- USFS shifts toward managing across ecosystems and landscapes.
- Nascent forest collaborative movement brings together often opposing groups to plan ambitious restoration plans on national forests; USFS leverages this work through stewardship contracting pilot projects to test innovative approaches to land stewardship.
- "Wyden Authority" allows USFS to spend National Forest System funding on private lands.

2000 – 2004

- Good Neighbor Authority enables state forestry agencies to conduct forest management and restoration on national forests; Utah and Colorado become proving ground for Good Neighbor Authority agreements.
- Farm Bill adds authorities for the Community and Private Land Fire Assistance Program.
- Healthy Forests Restoration Act expands stewardship contracting and agreement authority, and emphasizes community wildfire protection planning.
- Tribal Forest Protection Act enables federally recognized tribes to advance stewardship contracting or other agreements on national forests.

2008

Farm Bill requires state forestry and natural resource agencies to create State Forest Action Plans for the first time.

2009

- USFS Secretary Tom Vilsack emphasizes "all lands" strategy that brings landowners and stakeholders together across boundaries.
- Collaborative Forest Landscape Restoration Act creates a new program to establish science-based ecosystem restoration of priority forest landscapes in, and adjacent to, national forests.

2012

New USFS "Planning Rule" is the first rule to encourage coordination and cooperation beyond USFS boundaries.

2013

USDA introduces the Joint Chiefs' Landscape Restoration Partnership — funding all lands projects.

2014

Good Neighbor Authority becomes a national policy under Farm Bill.

2018

USFS publishes landmark report "Toward Shared Stewardship Across Landscapes: An Outcome-based Investment Strategy."

2021

Seven states, three territories and one tribe are engaged in individual, state or regional shared stewardship agreements.

"One of the amazing things that we've found is how strong a barrier that state line can appear to be. All of our policies, all of our regulations, all of our practices, say that we need to be working within our state boundaries. But our watersheds, our fire sheds, none of those respect those boundaries that we draw."

—AARON KIMPLE, COORDINATOR, TWO WATERSHEDS, THREE RIVERS, TWO STATES (2-3-2) COHESIVE STRATEGY PARTNERSHIP

accept the partnership, is they realize the potential benefits of working together on this," he says.

That's big in a region that has a degree of skepticism toward government, Gaertner adds. And the vision of the Mohawk Partnership is common to many Eastern U.S. regions facing land conservation, rural economy and forest health challenges. Shared stewardship agreements follow a different model than the Western U.S., since this area has no national forest and very little federal land. For this reason, there is a much greater focus on relationships, investments and technical expertise from other parts of the USFS besides the National Forest System.

Two beneficiaries of the partnership are Patrick and Katie Banks, who worked with a startup accelerator called Lever to win a challenge grant from EEA in order to open a much needed off-the-grid campground, Foolhardy Hill. Whitewater rafting and mountain biking are big here, and there aren't enough hotels to serve them. The project is built on old logging roads to limit its forest footprint and designed with sustainability in mind for the outdoor community. Elsewhere in the region, conservation easements helped by the Mohawk Partnership allow landowners to protect their forests but also benefit financially from them via tax breaks.

GOOD NEIGHBORS

Like Aaron Kimple, Laura McCarthy is fixated on water. She has no choice. That's because, as the state forester for New Mexico, she sees the impact of decreasing water flows. And she is alarmed.

"We just can't do it by ourselves. Nobody can. And I think in some ways, New Mexico is out front. And that's because we have no money. I call us a state that does things using duct tape and bubble gum," McCarthy says.

McCarthy supervises 78 people, half of them focused on fire full time. The other half focus on forest land management. She sees the 2-3-2 as particularly important for New Mexico because of water. The water relationship between Colorado and New Mexico is complex, governed by the Rio Grande Compact, an interstate water agreement that regulates how water is allocated between the two states and Texas. But this compact is seriously outdated, created in a time that did not anticipate today's overwhelming thirst for a limited water supply, as well as climate-driven drought. The three states are currently in litigation before the Supreme Court, arguing over the Rio Grande Compact.

"The way [the water compacts] are structured is kind of counter to any kind of collaboration or cross-boundary work," McCarthy says. "What's been really interesting and helpful about the 2-3-2 in the larger stewardship effort, is that it's like a whole different arena for talking about cross-boundary work that transcends these historical issues and problems with water management."

Kimple agrees. "One of the amazing things that we've found is how strong a barrier that state line can appear to be. All of our policies, all of our regulations, all of our practices, say that we need to be working within our state boundaries. But our watersheds, our fire sheds, none of those respect those boundaries that we draw."

He describes working with McCarthy as fantastic and stresses the importance of key partners such as the Forest Stewards Guild and The Nature Conservancy, which helped develop the Rio Grande Water Fund, a public-private collaborative that invests in forest restoration projects to ensure pure, clean water in the Rio Grande Watershed.

McCarthy paints a daunting picture of the future, describing a recent conversation with the deputy regional forester about priorities for the year. "We feel like we're in kind of a losing battle in terms of climate change. And yet, what we hear as we talk to others is that we're far ahead when it comes to shared stewardship and our planning and what we've already accomplished."

Is she hopeful? "I think what makes me hopeful is this attitude that I think is shared by many, many New Mexicans, and by pretty much uniformly everybody who's involved in shared stewardship. The attitude is — well, it may be grim, and the odds are probably against us, but we're going to give it everything we've got."

Top: New Mexico State Forester Laura McCarthy at an overlook above the Rio Chama River, a critically important watershed in New Mexico. In the background is smoke from a managed natural wildfire that is helping reduce forest fuels close to the river.

Bottom: A thunderstorm looms over Jackson Mountain in Colorado. This area is an important part of the 2-3-2 Cohesive Strategy Partnership that balances multiple interests and stakeholders to sustainably manage the landscape.

BOTTOM: MICHAEL REMKE PHOTOGRAPHY; TOP: COURTESY OF LAURA MCCARTHY

> "I think what makes me hopeful is this attitude that I think is shared by many, many New Mexicans, and by pretty much uniformly everybody who's involved in shared stewardship. The attitude is — well, it may be grim, and the odds are probably against us, but we're going to give it everything we've got."
>
> —LAURA MCCARTHY, STATE FORESTER, NEW MEXICO

Bottom left: This part of Jackson Mountain in Colorado is managed by a private company under a contract with USFS that reduces the fire risk in exchange for the right to sell the timber.

Bottom right: American Forests' senior manager of forest restoration, Austin Remple, talks to Aaron Kimple of the Mountain Studies Institute during a study tour on Jackson Mountain to highlight cooperative approaches to forest stewardship and wildfire management.

A POST-PANDEMIC REUNION

On an early morning in late June, 33 people crammed into trucks, vans and SUVs in Pagosa Springs, Colo., and began the slow climb up Jackson Mountain. They were part of a study tour organized by the San Juan Headwaters Forest Health Partnership, a participant in the 2-3-2 Cohesive Strategy Partnership.

Kimple was there, along with USFS staff, state and local forest leaders, mountain biking advocates, conservation leaders, volunteers, a homeowner's association and an impact investment expert from Washington, D.C.

As they set off up the mountain, spirits were high for a couple of reasons. First, due to COVID-19, this was the first time many of the participants had seen each other in a year and a half. And secondly, they were witnessing the first steady rainfall in months, offering relief from a brutal, years-long drought that has raised the wildfire risk to alarming levels.

One of those joining was Pagosa Springs resident Austin Rempel, who is American Forests' senior manager of forest restoration. Rempel notes that 60 to 70% of the traffic in town this summer was from Texas — part of the "Zoom Boom" of people moving to, and often working from, more remote locations. "It's a place where subdivisions are rapidly expanding into the forest, right alongside USFS land," Rempel says. "At every stop (during the study tour) we talked about the recreation pressure that the forest is seeing. The number of people in the forest is way higher than it's ever been."

MICHAEL REMKE PHOTOGRAPHY

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The first stop was an active logging site run by The Forest Health Company under a stewardship contract with the USFS that allows a private entity to come in and log. The area is overgrown and at high risk for fire, notes Rempel. "We were standing in a spot that would have been an extremely dangerous place to fight fire, because it was completely overgrown — it would have been one of those uncontrollable blazes near the town."

> "A lot of people talked about shared stewardship as like a state of mind, or an ethos. It was kind of like framing what everybody was already thinking and saying, and giving people something to unite around and just at the very least, start to have that conversation."
>
> —CHAD KOOISTRA, PUBLIC LANDS POLICY GROUP, COLORADO STATE UNIVERSITY

The arrangement relieves the USFS of the burden and cost of reducing the fuel load and disposing of excess biomass, while the company benefits from selling the timber it recovers.

At the next stops, they heard from a venture capitalist about bringing innovative finance tools to forest management and looked at how best to manage the explosive growth of mountain biking in the area. They also heard from USFS staff about new opportunities for recreation and resource use, and learned from birdwatchers about the impact of forest management on bird species.

Rempel says this type of event would be much harder without the convening power of a collaborative like 2-3-2 and organizing entities, such as Mountain Studies Institute and San Juan Headwaters Forest Health Partnership. "This is a shining example of the kind of local and regional collaboration that I think they're trying to enshrine with shared stewardship," Rempel says. "It's essentially a diverse group helping the USFS do more, and better work — be it highlighting things that aren't working; bringing resources like volunteers, outside funding and special expertise from birders, scientists and mountain bike planning teams; or even just constructive engagement and supportive voices."

THE LONG VIEW

So, what is the long-term outlook for shared stewardship? Two people who have been looking at that question are Courtney Schultz and Chad Kooistra of the Public Lands Policy Group at Colorado State University. Their ongoing five-year study examines the effectiveness of the USFS's 2018 Shared Stewardship Strategy during its initial implementation. After talking to over 120 people involved in shared stewardship at all levels last year, they found a high level of optimism about the strategy. Those interviewed agreed on the need for partnerships and for work on cross-boundary landscapes to address wildfires and forest/watershed health.

But they also shared concern about the human and financial resources needed for shared stewardship. Those interviewed wanted to know how to learn from other states and other collaboratives, what works and doesn't in terms of building relationships. There were questions about how different laws impact cross-boundary work, and how to mix and match funding sources and work with the forest products industry to leverage resources.

"A lot of people talked about shared stewardship as like a state of mind, or an ethos," Kooistra says. "It was kind of like framing what everybody was already thinking and saying, and giving people something to unite around and just at the very least, start to have that conversation."

As for Aaron Kimple and his long, strange trip from the Rio Grande to Colorado? He's excited about the prospects for the 2-3-2. The partnership of 24 organizations and government agencies has helped secure over $5 million in project funding along with new Collaborative Forest Landscape Restoration Funding from the USFS that will likely bring in around $3 to 4 million per year. They have worked with partners to treat over 10,000 acres through prescribed fire and build wider acceptance of its importance to forest ecology and wildfire reduction. They have also created new networks for timber suppliers and elevated local alliances.

He's also looking at the future and his hopes for his 11-year-old son and 14-year-old daughter. "We get out on the landscape and play with our kids, and they get out on the rivers, they hike and camp in the forest, they love all these resources. And to me, what I hope for them is to carry a love of this place, a love of what it offers."

Lee Poston serves as a communications advisor and writes from University Park, Md.

FACING PAGE: ILLUSTRATION BY CHRIS GASH

A U.S. Forest Service ranger and a volunteer plant a tree during an REI stewardship event aimed at dismantling illegal campsites in Grand Lake, Colo., just outside of Rocky Mountain National Park.

PLANTING THE PATH TO 1 TRILLION TREES

The people and partnerships behind 1t.org pledges

BY REANA KOVALCIK

THE GOAL IS AMBITIOUS: conserve, restore and grow 1 trillion trees worldwide by 2030. As the first chapter of the World Economic Forum's (WEF) 1t.org platform, the United States is stepping up to the challenge. Just one year after launching, more than 70 U.S.-based corporations, governments and nonprofit organizations have joined the 1t.org US Chapter. Together, they have contributed billions in financing, led a diverse array of forest management and workplace development activities, and pledged to conserve, restore and grow over 50 billion trees worldwide.

This dedicated network of forest allies and advocates aims to create healthy forests in rural and urban areas that can help slow climate change, clean the air and water, generate jobs, and provide habitat for wildlife and nature for people to enjoy.

Behind the high-profile pledges are hundreds of people working together to get the work done. They are bringing the pledges to life. The following stories highlight the essential work that comes from them. From members of The Sustainable Forestry and African American Land Retention Network (SFLR), to the Girl Scouts of the USA (GSUSA), employees of REI Co-op, and the communities and local leaders of the City of Dallas, it takes people power and collaborative partnerships to achieve the trillion trees goal.

A seedling is being planted during an REI stewardship event in Grand Lake, Colo., just outside of Rocky Mountain National Park.

REI

As a cooperative — an enterprise democratically owned by its members — REI is comfortable with partnership and collaboration. REI, an outdoor and recreational retailer, was formed in 1938 under the mantra that "a life outdoors is a life well-lived." Over the decades, as the climate crisis and its impacts on the outdoors and on society became increasingly harsh, REI began looking for more impactful ways to engage its community in environmental and social advocacy.

"Let's not forget that healthy forests mean healthy soils, mean clean water, mean clean air, mean great places to recreate, camp, hang out. If we're talking about climate, forests are fundamental."

— MARC BEREJKA, DIRECTOR OF COMMUNITY ADVOCACY AND IMPACT, REI

"In the outdoor industry, we ask, 'what's our value-add?'" says Marc Berejka, director of community advocacy and impact at REI. "From REI's perspective, we think we ought to be leaning into strategies that reinforce and reinvigorate the health of our natural environment. Trees are the quintessential tool to meet that need. Let's not forget that healthy forests mean healthy soils, mean clean water, mean clean air, mean great places to recreate, camp, hang out. If we're talking about climate, forests are fundamental."

In partnership with the National Forest Foundation — as well as REI's 20 million lifetime co-op members and nearly 15,000 employees — REI has pledged to plant at least 1 million trees across U.S. National Forests over the next decade. But the work doesn't stop there for Berejka and the REI team. In addition, the cooperative pledged this year to cut the company's greenhouse gas emissions in half and launched the REI Cooperative Action Network as a means of more deeply engaging community members. Fittingly, the first action item on the newly formed network has both a forest and a climate focus: Help pass the Repair Existing Public Land by Adding Necessary Trees (REPLANT) Act, legislation that also is supported by American Forests.

ABOVE AND PREVIOUS PAGE: REI

"The more of us who are working on this together, the further we can get faster," Berejka explains. "Cooperative Action Network is our name for the network, of course, but also we really believe in the power of cooperative action. There's so much to being part of the 1t.org community, even beyond addressing climate change. By all these different stakeholders linking arms under the 1t.org banner, we're driving additional value back into the environment and society."

Asked what he thinks individuals and communities should do to help make a difference, Berejka stresses the importance of pairing community efforts like tree planting with civic engagement and advocacy.

"It's noisy out there, there are a lot of distractions and things calling for our attention," Berejka says. "One of the inspiring things about the 1t.org mission is that it's a call to action. When you look at a tree, I'd like people to realize how much that tree is really giving back. And once you've got that in hand, what's next? Think about how can you raise awareness with more people, who can you get involved with, what steps can you take."

SFLR

Between 1865 and 1919, African Americans amassed 15 million acres of forests and other land across the American South. Now, just a century later, 97% of that land has been lost or stolen, due to inadequate or non-existent legal representation, discrimination in lending practices, unethical purchases, racism and myriad other factors.

SFLR helps African American forest owners realize the value of their lands so that forests are seen as an asset, not a burden. The organization works with landowners to address heirs' property issues — when familial land has been passed down without legal documentation, such as a will. The organization also educates landowners about the value of forests and how to responsibly manage them. SFLR provides the tools and connections to level the playing field for African American landowners, who have historically not had equal access to resources or equal ability to maintain forestlands. Their ultimate goal: keeping African American lands "forested and in the family."

"The SFLR program is bringing to the landowners' attention how the economic impact of managing their land can be a benefit to family members — especially to the ones coming behind them, such as their children and grandchildren," says Herman Baker, an SFLR program participant in Georgia.

Recognizing that African American forestland owners face unique hurdles and require specialized support to keep their land healthy, productive and in the family, SFLR's 1t.org pledge includes wrap-around support for them. This includes programming to connect African American landowners to financial and technical resources

Jane Goodall planting a tree in Budapest, Hungary in 2019.

A green global community

EVERY SECOND, the world loses an entire football field full of trees — not just in large rural forests but in cities too, according to The World Counts. To stem this catastrophic loss, WEF launched **1t.org** in January of 2020. It is a collaborative platform for governments, companies, civil society organizations and individuals committed to restoring and reforesting the planet.

"**1t.org** offers innovative technologies which will serve to connect tens of thousands of small and large groups around the world that are engaged in tree planting and forest restoration," said Jane Goodall, founder of the Jane Goodall Institute and United Nations Messenger of Peace, at the **1t.org** launch. "Creating this 'greening global community' will allow for sharing critically-needed funding and best practices — just what is needed to achieve the trillion trees goal in 10 years. Now is the time for everyone on the planet to do their part."

In August of that year, the **1t.org** US Chapter launched with 28 pledge partners under the leadership of WEF and American Forests.

FAR RIGHT: VITROLPHOTO/SHUTTERSTOCK

"The SFLR program is bringing to the landowners' attention how the economic impact of managing their land can be a benefit to family members — especially to the ones coming behind them, such as their children and grandchildren."

— HERMAN BAKER, SFLR PROGRAM PARTICIPANT

A close-up of a longleaf pine, a species that is prevalent on the lands where SFLR works in the southeastern U.S.

Roger Peterson, of Roger Peterson Property, photo left, discusses forest management and objectives with forestry graduate students from Duke University's Nicholas School of the Environment. The students were developing a forest management plan, at an SFLR anchor site, Roanoke Electric Cooperative in Northampton County, N.C., in 2018.

Steve Brown of Weyerhaeuser (left) and a McIntosh SEED landowner (right) at a Landowner Field Day where they observed the site-preparation process and learned about the various species of trees on the property and their growth time frames.

to help them conserve and manage the land most effectively, as well as land tenure education, legal assistance and the development of a forestry jobs pipeline for African American youth. In order to provide these services across their eight anchor sites (Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Arkansas and Texas), SFLR and their members work with a network of federal and local partners, including the U.S. Department of Agriculture (USDA), American Forest Foundation and the U.S. Endowment for Forestry and Communities.

"Access to resources and information is really key," says John Littles, executive director of McIntosh Sustainable Environment and Economic Development (McIntosh SEED), the SFLR anchor site in Georgia. "Heirs' property rights are extremely complicated, and not every owner knows how to navigate that system correctly. There are even certain landowners who don't know that property taxes have to be paid every year."

"Our partnerships, with anchor site leaders, 1t.org, USDA and others are critical to our ability to serve African American forest owners across the South," says Ebonie Alexander, executive director of the Black Family Land Trust in Virginia. "Through partnerships, we can become more visible, and the more visible we are, the easier it is for African American forest owners to find us and connect to the critical resources that will help them keep their lands forested and in the family."

GSUSA

Scouts may start out small in stature, but with a global community of 1.7 million girls and their families spanning 152 countries, the Girl Scouts' impact is anything but. Fueled by their passion for protecting and preserving our planet, GSUSA — with support from the Elliott Wildlife Values Project and American Forests — launched the Girl Scout Tree Promise this year. It is a national initiative to plant 5 million trees across the United States by 2026.

"When we were looking at how to address the climate crisis," says GSUSA National Director of Outdoor Strategy Amanda Daly, "it was important to me and my colleagues that we were providing our girls with a solution-based action, not a crisis-focused one. By committing to 1t.org to plant 5 million trees, our girls can serve as both change makers and stewards. Girl Scouts are blazing the trail for youth to lead on the climate crisis."

From Girl Scout Daisies to Ambassadors to family members and community partners, every member and friend of the GSUSA movement has a role in helping to reach the tree goal. At roughly five months into their 1t.org pledge, GSUSA already has over 34,000 trees in the ground — in every state, plus Puerto Rico and the District of Columbia. The organization is using resources from American Forests to ensure the right trees are planted in the right places.

For Kelly McDonald, staff for Girl Scouts Heart of New Jersey (GSHNJ), the Tree Promise program couldn't have come at a better time.

FACING PAGE: DANITA DELIMONT/SHUTTERSTOCK; ABOVE LEFT: ROANOKE ELECTRIC COOPERATIVE; ABOVE RIGHT: SFLR

"We had already been working on some tree-focused activity in New Jersey through an online program called Speak for the Trees, which was all about learning why trees are awesome and what their superpowers are," McDonald says. "By the time we launched Tree Promise as a local council, our girls were so excited. As fast as we built the programs, they filled up. We couldn't keep up with demand."

Between February and May, more than 560 New Jersey girls along with family and community members planted 4,418 trees. In reflecting on what's made GSHNJ's programs so successful, McDonald emphasizes how important partner relationships have been in engaging her Girl Scouts and the community on environmental and climate issues.

"We have a chance with the Tree Promise to raise an entire generation of girls who care about making the world a better place, who care about conserving and restoring our nation's forests," says McDonald. "The partnerships that Tree Promise has helped us form, like with the AmeriCorps Watershed Ambassador Program, Sourland Conservancy and South Mountain Conservancy, and the volunteers it's driven to us are resources that are going to help our girls lead in their community and be champions for environmental justice for years to come."

> "We have a chance with the Tree Promise to raise an entire generation of girls who care about making the world a better place, who care about conserving and restoring our nation's forests."
>
> — KELLY McDONALD, STAFF FOR GIRL SCOUTS HEART OF NEW JERSEY

Troop 20563 from West Orange, N.J., plants dogwood trees at The Oval Girl Scout Camp within the South Mountain Reservation, where Girl Scout volunteers and adults planted a "picnic grove" of dogwood trees. The Girl Scouts also planted 450 native tree seedlings in three forest regeneration areas that the Girl Scouts will "adopt" and care for.

Facing page, top: Daisies Girl Scouts from Troop 41084 and their troop leaders take part in a GSHNJ "Forest Celebration Hike" at Watchung Reservation in Mountainside, N.J. There, they learned about the importance of trees from Americorps Watershed Ambassador partners.

Facing page, bottom left: A Girl Scout from Trailblazer Troop 20056 takes a break during a rainy forest restoration project in Madison, N.J. The troop helped plant 250 evergreens to create a windbreak, part of a larger project to plant 1,000 trees with the help of the Madison Environmental Commission, Americorps Watershed Ambassador Brian Pinke and GSHNJ.

Facing page, bottom right: Cadette Girl Scouts from Trailblazer Troop 20056 from Hillsborough, N.J., and Americorps Watershed Ambassador Brian Pinke fish a tire out of the Whippany River as part of a Watershed Clean Up to clear riparian zones from damaging debris in spring 2021.

LEFT: GSHNJ; FACING PAGE, CLOCKWISE FROM TOP: KELLY MCDONALD; GWEN DURALEK; KELLY MCDONALD

One key element of Dallas' multi-faceted initiatives includes protecting 6,000 acres of hardwood bottomland forest in the Great Trinity Forest, located on the southern outskirts of Dallas.

DANVANPELT/SHUTTERSTOCK

DALLAS

After being pummeled by 16 different natural disasters in 2017, the U.S. set a new record high for costs related to extreme weather and major climate-related disasters: roughly $306 billion, according to data from the National Oceanic and Atmospheric Administration. Texas was among the states worst hit that year: Hurricane Harvey killed more than 70 people and caused approximately $125 billion in damage. With the human and financial costs from extreme weather events expected to continue rising, many Texas state and municipal leaders have joined forces with partners at the national level to help develop sustainable solutions. Assistant Director of Dallas' Office of Environmental Quality and Sustainability Susan Alvarez credits strong partnerships for much of the success her department has seen in developing and implementing climate-smart forestry initiatives.

"I'm just one person," says Alvarez, "so it's been amazing to be able to connect with community-level experts, as well as with the global 1t.org community. That network lets me learn from other pledges and find new resources and inspiration for our Dallas Urban Forest Initiative. It's especially helpful to know that other cities are experiencing the same challenges and to learn how they've dealt with them."

Together with her partners, Alvarez has developed several multi-faceted initiatives to combat the extreme heat, flooding and poor air quality caused by tree canopy loss and climate change. Key elements include protecting 6,000 acres of hardwood bottomland forest in the Great Trinity Forest; implementing the Branching Out Dallas program to plant an estimated 31,000 native trees in the city over the next 10 years; and implementing Dallas' Urban Forest Management Plan, a cohesive plan to plant, protect, maintain, preserve and increase urban canopy.

To achieve their ambitious goals, Dallas officials knew that they would need to work closely with community members and local experts.

"The key to this work is in building healthy, open and honest relationships," Alvarez says. "We had some resistance going in, and we had to work through that — mostly by being pests. We held a lot of meetings and worked very hard to build consensus. The public voice is powerful. We're doing this initiative, doing our climate plan because our community showed up at our budget meetings and demanded we talk about these things."

The city of Dallas is implementing the Branching Out Dallas program to plant an estimated 31,000 native trees in the city over the next 10 years.

President and CEO of the Texas Trees Foundation Janette Monear, who works closely with Alvarez on the Dallas pledge and Urban Forest Initiative, underscored how important community collaboration has been to the city's pledge progress.

"Through these partnerships, you can get so much more done," Monear says. "Susan and I are texting back and forth at night and on the weekend. We're collaborating because we have a relationship that's open and built on trust. When you have that kind of (connection), it's amazing what can happen."

A GLOBAL COMMUNITY

As we pass this milestone of 50 billion trees and look down the road to 1 trillion trees, Goodall's words about connections ring truer than ever. Now is the time for all of us — big, small and in between — to do our part. Dedicated advocates like those at SFLR, GSUSA, REI and the city of Dallas are leading the way and showcasing how community partnerships can help us conserve, restore and grow our way to 1 trillion trees.

Reana Kovalcik serves as a communications advisor for American Forests and the Forest-Climate Working Group.

To learn more about 1t.org, visit us.1t.org.

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Diana Tomback studies a whitebark pine in Custer Gallatin National Forest in Montana in 2017.

A true trailblazer for whitebark pine

DIANA TOMBACK and her backpacking partner Pamela were sitting under a pine tree in Inyo National Forest in the early 1970s when Tomback saw something that would change her life. A black and gray bird with white wing patches landed on the tree and began digging at its cones furiously. A wilderness ranger happened by, and Tomback asked if he knew the name of the tree, which he did — a whitebark pine. He didn't know the name of the bird, but said the locals called it a pine crow.

Fascinated by this tree and its industrious pine-cone excavator, Tomback went back to the university where she was finishing her master's degree and read everything she could find about whitebark pine and the mystery bird, which she learned was a Clark's nutcracker. Tomback found that virtually nothing except anecdotal observations had been written about the bird in the scientific literature, save for a nesting study and a molting study. "So when I started at the University of California, Santa Barbara (on my Ph.D.), I knew exactly what I wanted to study," she says.

Tomback did more than study. She literally wrote the book on whitebark pine and detailed the Clark's nutcracker's unique and critical role in the ecosystem. Through her doctoral research, Tomback discovered that the bird was the primary seed disperser for whitebark pine. Clark's nutcrackers transport the seeds in a specialized throat pouch and bury them across the mountainsides for later consumption, helping whitebark pine regenerate, including in areas burned by wildfires.

That natural repopulation is crucial to many high-elevation forests across the western United States and Canada. The tree creates critical plant and wildlife habitat and is instrumental to protecting regional water supplies. But unfortunately, whitebarks are rapidly vanishing, largely due to an introduced fungal disease, white pine blister rust, that has wiped out 90% of the pines in many northern forests. American Forests has made saving the whitebark pine a priority.

In 1986, Tomback was invited to join a federal research team investigating whitebark pine declines. The book she co-wrote — "Whitebark Pine Communi-

ABOVE: ELIZABETH PANSING

"I am at the capstone of a fairly long career. But I believe in the mission, with fire in the belly. ... Making sure that whitebark pine will be around after the next century is one of the reasons for getting up in the morning."

— DIANA TOMBACK, PH.D., PROFESSOR OF INTEGRATIVE BIOLOGY AT THE UNIVERSITY OF COLORADO, DENVER

ties: Ecology and Restoration" — along with the more than 100 scientific papers and book chapters that Tomback has written on the species, were some of the main resources for the U.S. Fish and Wildlife Service when it proposed to list whitebark pine as threatened under the Endangered Species Act (ESA). A listing could come as early as this year and would represent the widest ranging forest tree species ever listed under the ESA.

Looking beyond the listing though, Tomback has been working feverishly with American Forests and the U.S. Forest Service — partnering as well with other federal agencies and tribal governments — on a national restoration plan for whitebark pine. If action is not taken, experts believe it's possible that a combination of the fungal diseases, native pest outbreaks, competition from other trees (due to fire suppression) and climate change could see whitebark pine go extinct across much of its range. Intensive human intervention is, unfortunately, essential to preserve these iconic trees and the biodiverse communities they support.

"I have seen first-hand the passion, grit, determination and creativity Diana brings to whitebark pine science and restoration," says Elizabeth Pansing, senior manager of forest and restoration science at American Forests, who was a mentee of Tomback during her master's and doctoral research. "Her contributions to our understanding of its natural history and ecology — and push for coordinated and science-based restoration efforts across its range — have been, and will continue to be, integral to the success of its restoration and long-term persistence."

Fortunately, Tomback had the wherewithal to co-found the Whitebark Pine Ecosystem Foundation in 2001. The foundation has connected the forest management and scientific communities and created financial and political momentum behind saving the whitebark pine.

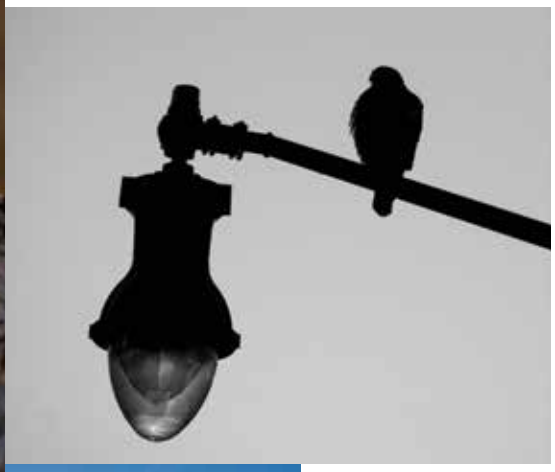
"I am at the capstone of a fairly long career," says Tomback, who currently serves as professor of Integrative Biology at the University of Colorado Denver. "But I believe in the mission, with fire in the belly. I want to see this restoration plan written, then disseminated and work begun on funding. And I'd like to see the federal agencies take the lead as we target these different core areas for restoration. Making sure that whitebark pine will be around after the next century is one of the reasons for getting up in the morning."

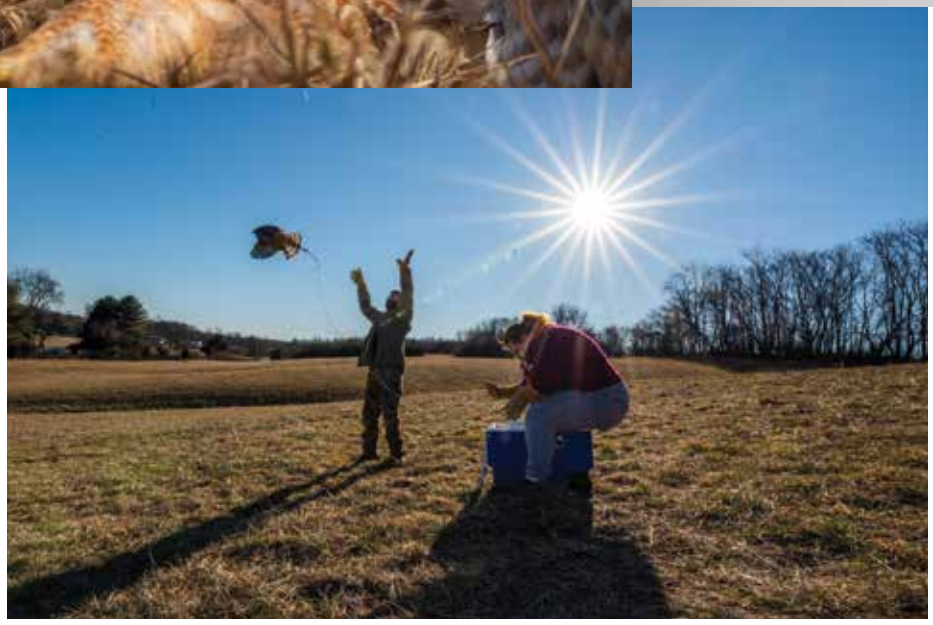
BELOW LEFT: J. SCHWANDT; BELOW RIGHT: ALLISON_H / SHUTTERSTOCK

Above: The Clark's nutcracker is the only animal that buries whitebark pine seeds in such a way that they can germinate and, ultimately, become full grown trees. Left: Tomback poses next to a fallen whitebark pine in Idaho's Sawtooth National Forest on a field trip sponsored by the Whitebark Pine Ecosystem Foundation.

last look

REHABILITATING BIRDS OF PREY AFTER LIFE IN THE CITY





Top left: After being injured by a car, this red-shouldered hawk was brought to the Owl Moon Raptor Center in Boyds, Md. At the center, it undergoes flight training to build back strength so it can return to the wild. Top right: From the top of a street lamp, a red-shouldered hawk scans the road below. Bottom: At the Owl Moon Raptor Center, two flight rehab volunteers work with a red-shouldered hawk.

THEY'RE MAJESTIC AND AWE-INSPIRING. We associate them with wide open spaces and towering forests. But a surprising number of birds of prey live nowhere near these wilderness areas. These raptors — species that hunt and feed on vertebrates that are larger than they are — have adapted to urban living, where lamp poles replace tree-top roosts, and the bustle of city life drowns out the relative quiet of nature.

Red-tailed hawks, peregrine falcons, bald eagles and other birds of prey have made their homes in places like Washington, D.C. They build nests atop and in the nooks of buildings, become more cautious in their hunting patterns to avoid cars, and provide countless hours of fascination for their human neighbors. But because of their location, these city-dwelling raptors may be at greater risk of certain threats than their forest-bound kin. Risks like colliding with windows, ingesting hazardous chemicals and being killed by cars when hunting and scavenging along roadways. Rehabilitation organizations — such as the Owl Moon Raptor Center in Boyds, Md. — work to save injured raptors. The center's mission is to rescue and rehabilitate injured, sick and orphaned birds of prey and return them to the wild in sound, athletic condition.

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