AMERICAN
FORESTS
WINTER/SPRING 2025

BRANCHING OUT

Growing careers and spreading equity through urban forestry

VOL. 131, NO. 1

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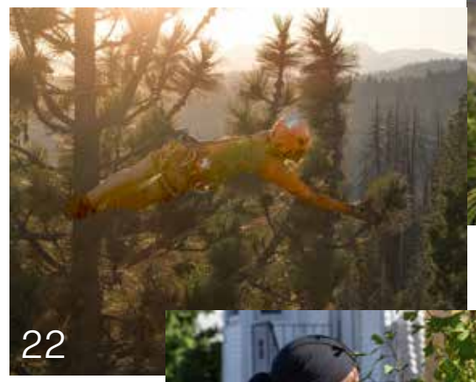
COVER PHOTO: HANNAH GREGORY / AMERICAN FORESTS



Features

Going back to the future at American Forests

BY JAD DALEY

AS AMERICAN FORESTS approaches our 150th year as an organization, we are celebrating all that we have accomplished in the past, with an eye toward the urgency and importance of continuing our work for the next 150 years and beyond.

When American Forests was founded in 1875, our forests and our country were at a historic inflection point. The country was recovering from the strain of the Civil War, and our forests were in trouble — overused to build a growing nation and beset by challenges such as erosion and wildfire. Over the next 30 years, this scrappy young organization built the foundation for the American forest conservation movement, culminating in the Second American Forest Congress in 1905, which catalyzed the establishment of the U.S. Forest Service and our National Forest System.

American Forests has been meeting the moment ever since to help our nation fully benefit from the nature-based solutions and transcendent experiences that trees and forests can provide.

We rose to the challenge of restoring our forests after World War II, when they were depleted from the war effort but in demand to build housing for returning servicemembers. We led the charge to modernize how we manage our public lands and pioneered using early computer technologies to show how important urban forests are for our cities. Today, we are focusing and empowering the forest movement to meet the growing climate change crisis.

While the challenges and opportunities have shifted over time, our role has not. American Forests has a unique, catalytic role as a service leader — guiding the entire forest movement then, now and in the future.

We define the most urgent drivers for action and build inclusive partnerships so everyone can help deliver forest solutions, from governments to Girl Scouts.

We use data to prioritize where forest solutions are most needed and quantify what we can accomplish.

We use science-based forestry innovation to make sure our actions unlock the full forest solutions that trees can provide, whether capturing carbon dioxide or naturally cooling our homes.

We lead by example, working across whole cities and natural landscapes to use best-in-class forestry approaches in the hard work of planting, caring for and protecting our trees and forests.

We use our voice with policymakers and the private sector to secure transformational public policies and financial investment so we can deliver forest solutions at a meaningful scale.

When I started as president and chief executive officer of American Forests, we deepened and formalized this unique service leadership role as American Forests' Impact Model. The Impact Model now provides a blueprint to guide us and our partners in building movements to advance new and innovative solutions for forest conservation and restoration.

Over the past seven years, we have shown how this approach can deliver forest solutions with unprecedented impact. American Forests is widely credited with building a Tree Equity movement that is now delivering tree-based natural cooling and clean air in American cities with a speed and scale that matches the climate threats these cities face. This U.S. movement is now spreading around the world.

We have also reversed a growing reforestation crisis on our national forests, providing permanent public funding and public-private partnerships to close a nearly 4-million-acre backlog of burned and degraded forests using climate-resilient reforestation techniques our organization helped to create. We have launched a massive push with the National Park Service and others to save America's most threatened tree, the whitebark pine, across the public lands of the American West.

We have secured more than $14 billion in federal funding to advance forest-climate solutions, including permanent forest conservation, wildfire resilience treatments and climate-smart forestry practices. We have helped the 26 state governments of the U.S. Climate Alliance to develop comprehensive strategies and policy approaches to advance forest-climate solutions. And we have turned this massive solutions investment into career opportunities and exploration for those who need them, such as formerly incarcerated persons and Tribal youth.

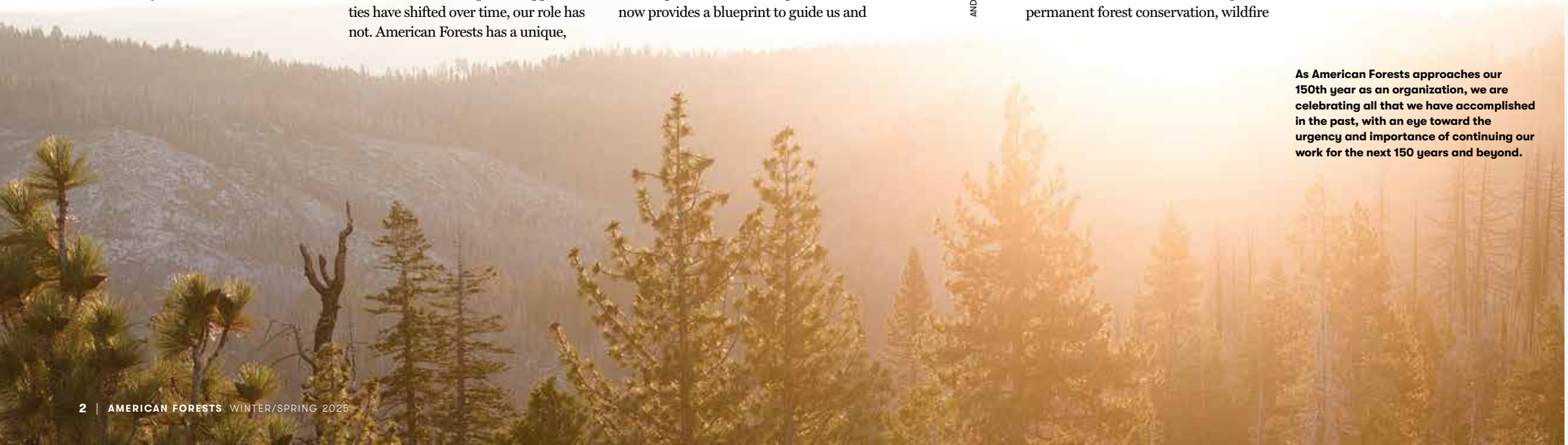
As we look to the next 150 years, we are lifted by the knowledge that we have affirmed a clear role for our organization in meeting such historic challenges and demonstrated our ability to deliver transformational change.

Thank you for helping us hit this historic milestone with so much momentum. As we complete our next five-year strategic plan over the course of this year, we cannot wait to share how we will launch forest solutions even higher in the years ahead.

James A. Daley III

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

ANDREW STUDER / AMERICAN FORESTS



As American Forests approaches our 150th year as an organization, we are celebrating all that we have accomplished in the past, with an eye toward the urgency and importance of continuing our work for the next 150 years and beyond.

PLACE-BASED PARTNERSHIPS

Rio Reforestation: It takes a village to restore a forest

AS THE SUN RISES over a barren field in Texas' Rio Grande Valley, the light reveals figures who have been there for hours setting up for the volunteers arriving soon. Crates of 30 species of thornforest seedlings line recently plowed rows as workers turn their attention to preparing food, water and shade for the 30th Rio Reforestation community planting event. American Forests has been partnering with the U.S. Fish and Wildlife Service to bring this event to the community since 1999. Since the event's inception, hundreds of acres have been planted throughout the expansive Rio Grande Valley, connecting isolated tracts of land to create a wildlife corridor.

Across the parking lot, an ever-growing dust cloud foretells the arrival of community members who have volunteered their Saturday morning to come plant 15,000 seedlings to reforest 10 acres of land. The need has never been so profound, nor tangible. The tangle of thornforest that used to cover the valley — providing habitat to birds, pollinators and the only remaining ocelot population in the United States — has been reduced to a small riparian strip bordering the shrinking Rio Grande River. Organizing partners Defenders of Wildlife and Friends of the Wildlife Corridor have spent decades advocating for the creation and protection of the wildlife corridor that Rio Reforestation has been building.

Busloads of students pull in, followed by a stream of cars that fill the lot. At least four generations of community members — from students and scout troops to families and employee volunteer groups — make up the 1,627 volunteers who will work side-by-side, making this the largest Rio Reforestation event to date. "Every volunteer embodies the resiliency and strength of the Rio Grande Valley," says Mylen Arias, American Forests' senior manager of community resilience.

ALL PHOTOS: JEREMY IGLESIA JR. / AMERICAN FORESTS

Left: Local partnerships are the linchpin that has made 30 years of Rio Reforestation possible. From cultivating seedlings and fundraising to community outreach and gathering volunteers, "it requires experience, knowledge and dedication to produce," explains Marisol Kuri, American Forests' senior manager of Texas reforestation.

The incredible turnout is a testament not only to the strong community ties that compel so many to play an active role in restoring the land, but also to the partnerships that have cultivated it. The seedlings being planted were carefully grown by local nurseries, while the land being reforested is owned by the U.S. Fish and Wildlife Service. Arias explains that "the success of Rio Reforestation lies in the power of partnerships that turn vision into action. It is never a solo effort, and we are truly thankful for our partners' support."

After their hard work, volunteers enjoy boxed lunches, courtesy of the beloved Texas grocery chain and event sponsor H-E-B. Volunteers then visit booths hosted by partnering organizations to learn more about local conservation efforts. Many also pick up a copy of the new Rio Grande Valley Special Edition of *American Forests* magazine, featuring stories from local voices in both English and Spanish, along with their own native seedling to take home and plant.

As the afternoon sun settles in and the horizon promises some much-needed rain, volunteers begin to make their way home. In leaving, they drive through a section of thornforest that was planted during the 2016 Rio Reforestation. Those trees now loom over the cars, providing not only shade and sanctuary to the wildlife that has returned, but also mitigating the effects of both water runoff and floods for nearby homes. Soon, only those who worked tirelessly to plan this day remain to take in the result of their collaboration. "This event is and has always been a labor of love: for our land, for our wildlife, for our people and for our history," says Arias. It won't be long before these 10 acres grow into a mature thornforest as interwoven and protective as the community that came together to restore it.

Learn more by reading the Rio Grande Valley Special Edition of *American Forests* magazine at **americanforests.org/RGVmagazine** or by scanning the QR code.

Top: In less than four hours, 15,000 seedlings were planted across 10 acres thanks to the hard work of 1,627 volunteers under the guidence of U.S. Fish and Wildlife Service staff. In just a few short years, this plot of forest will connect the thornforests on either side planted during previous Rio Reforestation events. Bottom: "It is heartwarming to see so many people come together with a shared investment in the health and future of our community," comments Mylen Arias, American Forests' senior manager of community resilience. "These seedlings are more than just plants, they represent hope for the future and the power of our people."

INNOVATION

More than a map: Tree Equity Score serves as interdisciplinary tool to inspire youth

WHEN STEVIE KITCHING walks into a classroom, she has one goal: to help lower the barriers to outdoor experiences for marginalized students through hands-on lessons and activities. Working as an educator for the nonprofit Let's Go 123 in Lancaster, Pa., Kitching is always looking for innovative teaching tools that help her students connect to the material.

Over the past year, American Forests' Tree Equity Score has become an integral part of her lessons. The Tree Equity Score tool combines demographic, climate, health and other data points with tree canopy cover to generate a neighborhood score which serves as a metric to guide cities in ensuring that every neighborhood, regardless of race or income, receives the benefits of trees. Julia Twitchell, senior director of data, design and UX at American Forests, explains, "There are deep disparities woven into our urban fabric, and this map reveals how some of our neighbors bear the weight of our shared histories more than others." Upon discovering the tool, Kitching spent time exploring maps of her students' neighborhoods to better understand their communities.

"I knew that if the tool got me that interested, it could engage the students as well," Kitching explains.

In a recent lesson, Kitching took her middle school students outside for a "walk-and-talk" to explore their campus environment. As they walked, the students pointed out that most of the trees around the school were small, ornamental ones clustered in the front and reported that during recess they often had to jockey for a spot under the lone tree large enough to provide shade.

Afterward, Kitching introduced them to Tree Equity Score, giving each student the freedom to explore the tool — and their own neighborhoods — before the class refocused on their school's score. By the end of the lesson, students were not just learning about Tree Equity, they were actively planning how they could improve their campus' Tree Equity Score.

Kitching has seen students work with the map and each other, animatedly comparing their neighborhoods and debating the possible reasons their respective scores might differ. What's more, students are retaining the information and asking to use the tool in subsequent lessons.

A student navigates the Tree Equity Score tool while the class compares Lancaster city's score to their own neighborhoods' statistics, uncovering the disparity in tree canopy cover.

LEFT: STEVIE KITCHING

Educator Stevie Kitching celebrates a successful introduction to Tree Equity with some of her students from Hazel Jackson Middle School in Lancaster, Pa.

BOTTOM RIGHT: AMERICAN FORESTS; ABOVE: STEVIE KITCHING

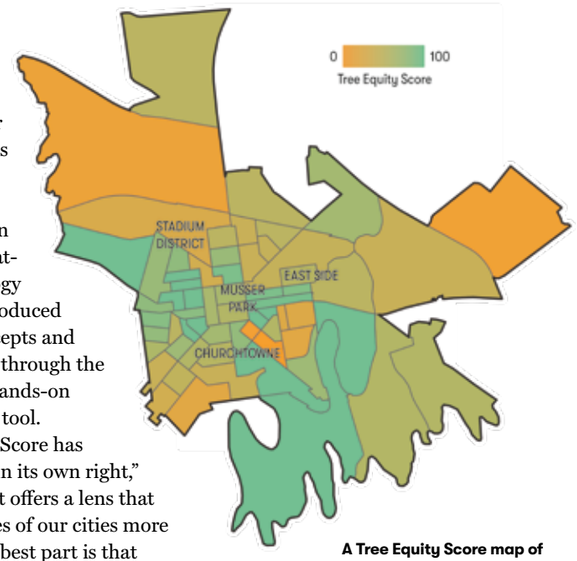
"Getting students engaged enough to get curious and ask questions is every educator's goal. Having a tool like Tree Equity Score in my back pocket gives me a resource to help make that happen."

— STEVIE KITCHING, EDUCATOR, LET'S GO 123

During a lesson about erosion, a student wondered about the Tree Equity Score of their local waterway's riparian area. She and her classmates checked the map to answer the question for themselves. Another student was overheard planning to use the tool to reroute his walk home from school to a path with more shade. Kitching emphasizes, "Getting students engaged enough to get curious and ask questions is every educator's goal. Having a tool like Tree Equity Score in my back pocket gives me a resource to help make that happen."

The Tree Equity Score map is free and user-friendly. It has been used heavily by American Forests' implementation partners, but by bringing the tool into the classroom, Kitching demonstrates that the concept of Tree Equity is compelling and accessible to even our youngest citizens and future land stewards. Students have an easy time navigating the technology while being introduced to complex concepts and new vocabulary through the impactful and hands-on visual aid of the tool.

"Tree Equity Score has become a force in its own right," says Twichell. "It offers a lens that makes the stories of our cities more visible. And the best part is that anyone — whether a student or a seasoned city planner — can use it to make a difference."



A Tree Equity Score map of Lancaster, Pa., shows the disparities in tree cover across the city, with scores ranging from 68 to 100.

DONOR PROFILE

Family's consistent support aims to generate long-term impact for cherished landscape

KATHY AND TIM EVANS' connection to American Forests began with a hope to contribute to impactful change.

"We wondered, 'how can ordinary people have an impact on climate change?'," Kathy says. "One answer is through trees. Trees affect climate globally, beyond just the local area where they grow."

When looking into organizations that shared their passion for natural climate solutions, they were impressed with American Forests' collaborative approach, innovative science and large-scale reforestation impacts in one of the landscapes they most cherished. American Forests' Northern Rockies program was the perfect fit for their Donor-Advised Fund, which they had established with inheritance money from Kathy's parents, Robert and Juletta Corbin.

"My parents were born and lived their entire lives in northwestern Wyoming," she says. "They shared their passion for camping, hiking and fishing in Yellowstone Park and the Greater Yellowstone Ecosystem with my brother and me. I think they would be pleased that the legacy they left is working to help restore and preserve the alpine forests they so dearly loved."

To have their desired impact, Kathy and Tim decided to support American Forests with monthly donations, providing financial predictability and year-round benefits for reforestation work, as well as helping them increase their impact over time.

"Giving monthly allows us to donate more money over a longer period, which is a win for the whitebark pine population and the entire ecosystem in the northern Rocky Mountains," says Kathy.

This investment in American Forests connects each of the dots of the Evans' passions — from reducing global greenhouse gas levels to restoring long-lasting species like the whitebark pine. Kathy illustrated her vision of their impact by saying, "I like to picture polluted air from other parts of the globe flowing through our lovely northern Rocky Mountain forests, being stripped of some of its CO_2 through photosynthesis and leaving a little cleaner than it arrived."

Above: (From L to R) Kathy Evans and her son Benjamin, husband Tim and son Danny pose for a family photo at the top of Beartooth Pass in Wyoming's Shoshone National Forest during a vacation in June 2021, a trip the family took to visit Kathy's parents' graves just months after her mother had passed away.

COURTESY OF KATHY EVANS

WASHINGTON OUTLOOK

American Forests lays out policy priorities for 2025

WHILE THE ELECTION results have brought uncertainty to many sectors, being good stewards of our nation's forests and trees is a uniquely bipartisan issue. For 150 years, American Forests has proudly worked across the aisle to highlight and harness the power of trees across all landscapes and ecosystems, and to optimize their benefits for all people.

Our forests need an all-hands and all-lands approach, and American Forests is dedicated to working with the Trump Administration, Congress, states, Tribes and partners to advance science- and data-informed practices that embrace the full potential of forests and trees. Together, we can reimagine the potential of our neighborhoods and landscapes with bold investments in reforestation and resilience — seeing every tree and every forest as critical infrastructure for community health and prosperity.

In 2025, American Forests will focus its efforts on four main priorities:

1. Accelerating reforestation on national forests to address post-wildfire restoration and mitigate future risks.
2. Promoting "cool corridor" strategies to combat the dramatic rise in life-threatening extreme heat in our communities by planting trees where they will have the most health and access benefits along transportation routes.
3. Unlocking opportunities for private landowners and Tribes to conserve forests and implement management activities that improve health and resilience.
4. Spotlighting forest products as a critical component to our nation's conservation, restoration and sustainability goals.

LEON VILLAGOMEZ / AMERICAN FORESTS

Underlying these priorities is a strong connection to workforce development, economic growth, healthy communities and rural revitalization — all key issues for the incoming administration and the Republican-led U.S. Senate and House of Representatives. This alignment will greatly increase the impact and effectiveness of our work in 2025 and beyond.

Stay up to date on the latest opportunities for engagement through American Forests' Action Center at **americanforests.org/take-action** or by scanning the QR code.

American Forests to host ninth American Forest Congress

This summer in the nation's capital, American Forests will bring together diverse perspectives including environmental experts; policy- and change-makers; state, local and Tribal governments; industry leaders and others — to collectively respond to the threats facing our forests and develop a path for measurable impact within the forestry sector and beyond.

The American Forest Congress is a proud tradition that has influenced the direction of forest conservation and management in America for more than a century. Since the first American Forest Congress in 1882 to the most recent in 2022, these seminal events have led directly to major outcomes in the forestry sector, including the creation of the U.S. Forest Service, the establishment of the eastern national forests, new community-based and collaborative approaches to forestry, and efforts to ensure women and allies lead the way in diversifying leadership within the forest community.

9TH AMERICAN FOREST CONGRESS
HEALTHY FORESTS, THRIVING COMMUNITIES

The theme of Healthy Forests and Thriving Communities highlights the Congress' commitment to an agenda that grows economic opportunities for forested communities while advancing practical forest management and stewardship in the face of climate change and other stresses. By engaging diverse partners, the Congress will invite new perspectives, broaden cross-sector collaboration, and tackle persistent barriers to our capacity, workforce, investment and stewardship goals.

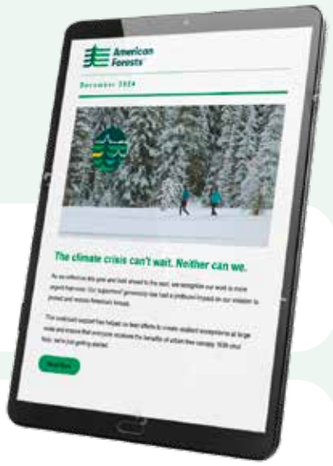
The Congress is not the endpoint of the work — rather, it is a launchpad. Success will ultimately be measured by our ability to elevate our shared vision and mobilize and grow the forest community to accelerate on-the-ground progress.

To learn more, visit **forestcongress.org**

MOTIVATIONAL MUSINGS

Connect with us for inspiration at your fingertips

Did you know you can read American Forests' stories in a variety of places? We encourage you to connect with us online and be the first to receive our latest news and most inspiring stories. Here's how:



Sign up to receive our newsletter.

Stay up to date on all that is happening at American Forests. It's simple: Sign up at **americanforests.org/subscribe** or by scanning the QR code.

Visit our blog.

Read American Forests' inspiring impact stories and most up-to-date developments from the field on our blog at **americanforests.org/blog**. Our posts tell stories that show our impact through:

POWERFUL PARTNERSHIPS

New greenhouse seeds hope for Montana's restoration effort

"There's clearly a need for more seedlings and plants for reforestation because of bigger and bigger severe fires. It's great to get help to put up a new greenhouse that gives us added capacity to meet that need."

— Matt Arno, bureau chief, the Department of Natural Resources and Conservation's Forestry Assistance Bureau

MONUMENTAL LEGISLATION

Restoring a future for our forests through the REPLANT Act

"The REPLANT Act is not only making this work possible, but it's also allowing American Forests to create unique partnerships that can address the overwhelming need to protect our forests both today and in the future. We can't do it alone."

— Brian Kittler, chief program officer for Resilient Forests, American Forests

STAFF EXPERTISE

Q&A: What nurseries need to reforest a city

"My hope is that we can help increase the capacity of tree nurseries so they can grow and expand the number of trees available to the communities that need them most."

— Becky Schwartz, director of urban forestry innovation, American Forests

Connect with us on social media.

Get your daily dose of forest facts, climate action and tree-filled fun! Follow American Forests on social media to branch out your knowledge, grow your impact and have a tree-mendous time. Plus, we want to hear from you! Use social media to engage with us and share what matters most to you about climate action and greening your community. We always love a good photo of your pets enjoying our forests, too!

Find us and tag us: @AmericanForests

- **Threads**
- **Facebook**
- **X**
- **LinkedIn**
- **Instagram**

PHOTOS, FROM TOP TO BOTTOM: ASHLEY MATTSON / MONTANA DNRC; LUIS VIDAL / AMERICAN FORESTS; PAMELA PASCO / NATURAL AREAS CONSERVANCY

CRACKING THE CODE FOR WHITEBARK PINE

Scientists' efforts to use DNA sequencing may speed up the clock on whitebark pine restoration

BY CAMERON WALKER

COLIN WANN / NPCO

Whitebark pine, deceptive in their simplistic beauty, are an iconic species to many high-elevation ecosystems such as the characteristic granite mountains of Yosemite National Park pictured here.

Left: Nancy Bockino, a whitebark pine ecologist with the Northern Rockies Conservation Cooperative, scales a whitebark pine in Grand Teton National Park to remove the wire mesh cages and collect its cones. Below: Collected cones, along with needle clippings, are sent off to be evaluated by researchers to identify disease resistance, both using traditional approaches and through the Whitebark Pine Genome Project.

THE WHITEBARK PINE growing beneath Yosemite National Park's peaks look deceptively simple in their beauty — green needles and hardy trunks against a backdrop of grey granite and blue Sierra Nevada skies.

Yet these high-elevation trees, the linchpin of complex ecosystems in mountains across the American West, are experiencing extreme threats, including a deadly fungus that causes white pine blister rust, a disease which chokes whitebark pine of its nutrients. Scientists are now working against the clock to identify which of the trees' genes might be the key to protecting them.

Nancy Bockino, a whitebark pine ecologist with the Wyoming-based Northern Rockies Conservation Cooperative, says this iconic pine's impact extends beyond its high-country home: "They really protect the watershed. If you go up in the mountains and you look where the snow deposits in the winter, you'll see whitebarks catching the snow." The trees shade the snow and slow down the melting process, allowing spring runoff to feed streams and rivers at a sustainable pace.

A few years ago, Bockino and her Northern Rockies Conservation Cooperative crew became part of American Forests' early work to explore the restoration potential for California's whitebark pine. She is now leading her team, which traveled to three California national parks in 2024 — Yosemite, Sequoia and Kings Canyon — to support American Forests' efforts to collect cones and needles from healthy whitebark pine. They sent these specimens to researchers at the University of California, Davis as part of the Whitebark Pine Genome Project, which seeks to accelerate whitebark pine restoration by learning why certain trees are more resistant to blister rust, insects and climate-induced changes than others.

LEFT: COLIN WANN / NRCC; RIGHT: GLACIER NATIONAL PARK

NEW URGENCY, NEW APPROACHES

Bockino is part of a network made up of researchers, forest managers, cone collectors, tree geneticists, and government, nonprofit and Tribal organizations working to protect whitebark pine. Their work has long been fueled by a love of these iconic trees and their high-mountain ecosystems. But their efforts became more urgent in 2022 when the U.S. Fish & Wildlife Service announced it would be listing the whitebark pine as threatened on the Endangered Species List.

The move has catalyzed support for protecting existing stands of whitebark and developing new ways to accelerate reforestation, where needed. A notable example is a five-year agreement between American Forests and the National Park Service to restore the species across its range. The agreement funded the efforts of Bockino and her team to collect whitebark pine cones and needles — a process that involves finding healthy trees on the landscape, caging cones from seed-loving critters each spring, and then returning to the trees in the fall to gather cones. These cones, along with needle clippings, are then evaluated by researchers to identify disease resistance, both using traditional approaches and through the Whitebark Pine Genome Project. The project was started at the University of California,

THIS PAGE: BRIAN ALLEN

Above: A dissected whitebark pine seed reveals the diploid embryo in the center. DNA is extracted just from the white haploid megagametophyte tissue that surrounds the embryo. Left: At his lab in Davis, Calif., University of California, Davis graduate student Brian Allen soaks whitebark pine seeds overnight in water and peroxide to loosen the seed coat.

Above: Many collected whitebark pine cones are sent to the Dorena Genetic Resource Center in Cottage Grove, Ore., where they are grown into seedlings, exposed to blister rust and then monitored to test for disease resistance, as seen here in the range in needle discoloration. Right: David Neale, principal investigator for the Whitebark Pine Genome Project, poses next to a whitebark pine during a hike in Idaho's Sawtooth mountains. Neale's love for mountain adventures, such as hiking, climbing and skiing, helped to spur his affection for the iconic whitebark species.

Davis and is now hosted by the Whitebark Pine Ecosystem Foundation, a partner of American Forests since 2016.

Humans have particular genes, or combinations of genes, that give them certain qualities, such as eye color, or make them more susceptible to disease, such as genetic mutations linked to high cholesterol. Trees' genes work the same way. Yet, the complete sequence of whitebark pine DNA, also called its genome, is 10 times as long as human DNA.

In late 2023, David Neale, the principal investigator for the Whitebark Pine Genome Project, and his colleagues at Johns Hopkins University, the University of Connecticut and Northern Arizona University determined the sequence of the whitebark pine genome using genetic material from a 150-year-old tree. Now, they're beginning to look at which genes within this genome might give some whitebark pine an edge against the threats they face.

"We're trying to make the 23andMe for trees," says Neale, a distinguished professor emeritus at the University of California, Davis. And just as sequencing the human genome once seemed impossible and is now ubiquitous, Neale has been instrumental in getting forests the same treatment. In 2014, he and his colleagues sequenced the loblolly pine genome — the first conifer genome ever completed and largest genome assembled at that time — followed by the even-larger sugar pine in 2015. Now, he and his team are focused on using sequencing for whitebark pine.

AIMING FOR ENORMOUS IMPACT

Peering into the DNA of whitebark pine could ultimately help forest managers speed up and reduce the cost of the process of identifying healthy trees. Doing so would help them get more of the seedlings most likely to thrive into the ground sooner — a boon to threatened whitebark populations.

The current process to determine whether a tree might be able to withstand blister rust on its own is slow and expensive. Forest managers must collect cones from the tree, extract seeds from those cones and grow seedlings in the lab. They must wait for the seedlings to grow and then test them against blister rust, which can take as long as a decade and cost more than $1,000 per tree. The Whitebark Pine Genome Project researchers anticipate being able to get the same results in a matter of months and for only around $100 per tree.

"If you can uncover the underlying genes that determine resistance, then you can go to the forest, clip a couple of needles off, put them in a test tube, isolate the DNA and determine whether it's a carrier of resistant genes," Neale says.

"This project is only possible because it brings together and leverages preexisting resources provided by our American and Canadian partners, built through years of dedicated work. Seed samples had already been collected from across the species' natural range, including in really remote areas, along with extensive disease resistance data, waiting to review their genetic story."

— BRIAN ALLEN, GRADUATE STUDENT, UNIVERSITY OF CALIFORNIA, DAVIS

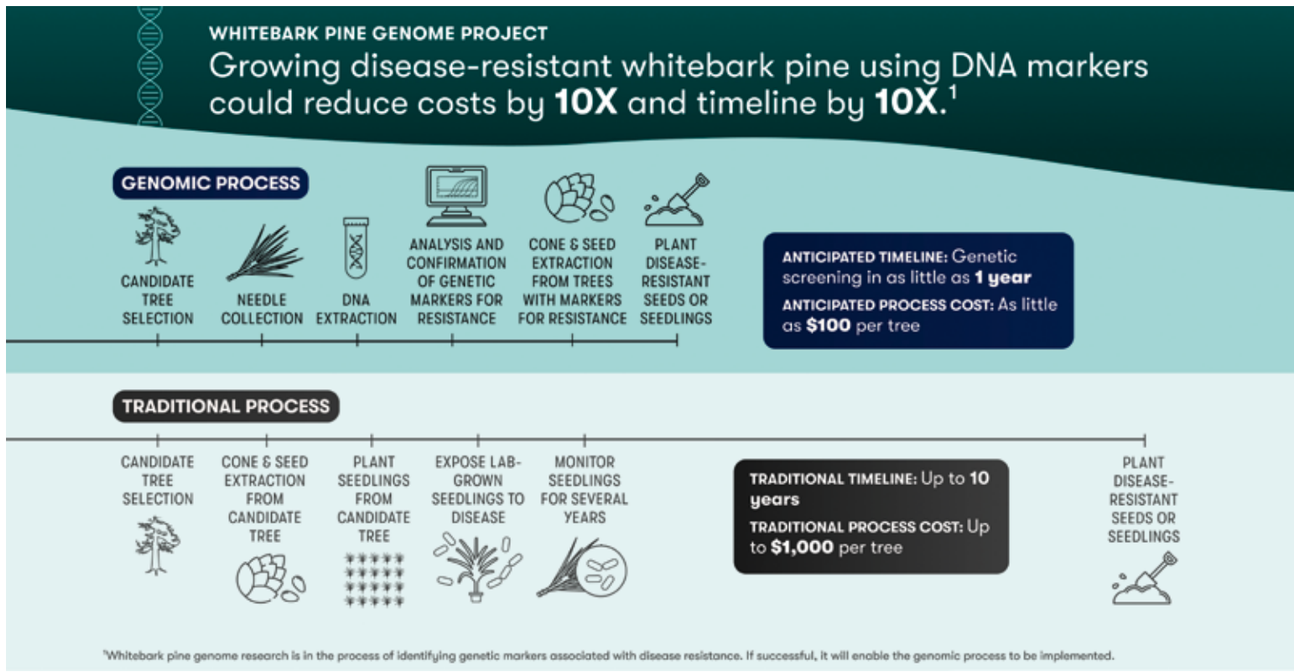
If the project bears fruit, the result would have an enormous impact on whitebark pine, says Julee Shamhart, executive director for the nonprofit Whitebark Pine Ecosystem Foundation. By simplifying the process of identifying healthy trees for forest managers, Shamhart says, restoration "can be done more efficiently, more effectively and more often."

In fall 2024, Neale's graduate student, Brian Allen, started the work that will hopefully make spotting resilient trees simpler. At his lab in Davis, Calif., Allen received samples collected that summer from healthy trees in the Sierra Nevada and used detergents to break down pine seed and needle tissue to extract DNA. In early 2025, he will send whitebark pine DNA to a company that can turn this DNA into the individual sequence for each tree they've sampled, the first step in identifying which genes might be giving them an edge against blister rust.

Once they return the results, he'll start looking for segments within a tree's DNA called markers or regions. If a longer piece of DNA is like a paragraph, a marker or genetic region would be a word that makes up that paragraph. The hope is that Allen and his colleagues will be able to find

LEFT: JESSE ROOS / AMERICAN FORESTS; RIGHT: COURTESY OF DAVID NEALE

JULIA TWICHELL / AMERICAN FORESTS



Zoe Klein, American Forests' senior manager ecologist, works among the whitebark pine near Roosevelt Lake in Yosemite National Park. The U.S. Forest Service is working closely with the Northern Rockies Conservation Cooperative and American Forests to allow managers in the Sierra Nevada to take advantage of lessons learned from the northern part of the whitebark range, which has been heavily impacted by blister rust and native pine beetle outbreaks.

markers that individually, or in combination, may make a particular tree more resilient to disease, heat or drought conditions.

For forest managers who plan to restore whitebark forests, markers like these "could help identify trees on the landscape that would be good sources for cones," Allen says. Determining which whitebark to use as a seed source would potentially be as easy as clipping a needle and sequencing that tree's DNA — if the results show that the tree has in-born resistance to blister rust, for example, managers could grow new seedlings knowing that they're giving the forest the best chance to survive.

EXPANDING RESEARCH

Allen is also working with samples of whitebark pine from across the West and emphasizes that the project wouldn't be possible without extensive collaboration. Funding comes from the U.S. Fish and Wildlife Service, the Whitebark Pine Ecosystem Foundation, American Forests and donors like the Life Time Foundation. Samples are provided by the U.S. Forest Service, British Columbia Ministry of Forests, the University of Montana and American Forests.

"This project is only possible because it brings together and leverages preexisting resources provided by our American and Canadian partners, built through years of dedicated work," Allen explains. "Seed samples had already been collected from across the species' natural range, including in really remote areas, along with extensive disease resistance data, waiting to review their genetic story."

The partnership between American Forests and the National Park Service is another joint effort that is already expanding whitebark pine research, says Zoe Klein, American Forests' senior manager ecologist. She is working on whitebark pine within Yosemite, Sequoia and Kings Canyon National Parks, an area where whitebark has been relatively understudied in part because of the remoteness and inaccessibility of the trees.

Whitebark pine in the southern Sierra also have not been heavily impacted by blister rust — yet. Klein and others say this means that this is the perfect time for American Forests and partners to ramp up their efforts.

"Our trees are healthy, but you don't want to just assume that they're going to be that way forever," she says.

As part of this work, Klein is mapping out potential cone collection sites across the landscape. In 2025, she will also be working to develop a conservation strategy for the parks, as well as creating an interagency working group to bring together partners working on whitebark pine across the southern Sierra.

"It's really cool to have my position starting right now, when our trees [in the Sierra Nevada] are really healthy, and we could develop all these systems and programs of cone collecting and conservation planning to make sure that our trees stay healthy," she says.

MOUNTAIN LOVERS' SUPPORT

A new partnership with the Life Time Foundation is supporting Klein and others at American Forests who are working to restore whitebark pine across the West. In May 2024, the Life Time Foundation provided a $1 million grant for whitebark pine restoration, which aligns with the foundation's mission to support healthy people, a healthy planet and a healthy way of life. A portion of this grant is dedicated to help the Whitebark Pine Genome Project identify healthy trees on the landscape, too.

"My hope is that we can build a passionate community dedicated to raising awareness about the vital role these species play in sustaining high-mountain ecosystems and supporting biodiversity," says Valeria La Rosa, the foundation's program director.

Whitebark pine's connection to high-altitude ecosystems is what has drawn many of the people working to protect it. The Life Time Foundation attracts athletes from around the world to mountain peaks to run and bike through whitebark territory in the Rocky Mountains. It is athletes and mountain lovers of all types who have driven the grassroots movement to support whitebark.

The mountain lovers championing these trees include Neale, who has hiked, climbed and skied among whitebark pine in the West, and Klein, who fell in love with the high-country during a post-college job in the Sierra Nevada national parks.

Bockino's ties to the mountains — and whitebark — run particularly deep. She's spent more than two decades working with whitebark pine in the Rocky Mountains alongside jobs as a ski and mountaineering guide. Now, her work in partnership with American Forests has brought her back to another of her favorite places, the Sierra Nevada. She has visited many times over the years both as a climber and to "recharge my whitebark bank account" by visiting thriving trees, a contrast to her work with populations heavily affected by blister rust in the Rockies.

"I think trees are caretakers," Bockino says. "It's not only that they make oxygen out of carbon dioxide. There's just something about being around a tree where you feel cared for and safe."

Now, she's one of many who are returning this kind of care to ensure the whitebark pine can thrive.

Cameron Walker writes from California and is the author of the children's book "National Monuments of the U.S.A."

Below left: Julee Shamhart, executive director for the Whitebark Pine Ecosystem Foundation, enjoys biking, hiking and skiing among her beloved whitebark pine whenever possible. Below right: Whitebark pine's connection to high-altitude ecosystems, places in which mountain lovers frequently find themselves adventuring, is what has drawn many of the people working to protect it.

ABOVE: COURTESY OF ZOE KLEIN

BOTTOM LEFT: COURTESY OF JULEE SHAMHART; BOTTOM RIGHT: COLIN WANN / NRCC

SEIZING THE SEED SUPPLY MOMENT

Cone collecting is key to reforestation — and California's trees just produced a massive amount of cones

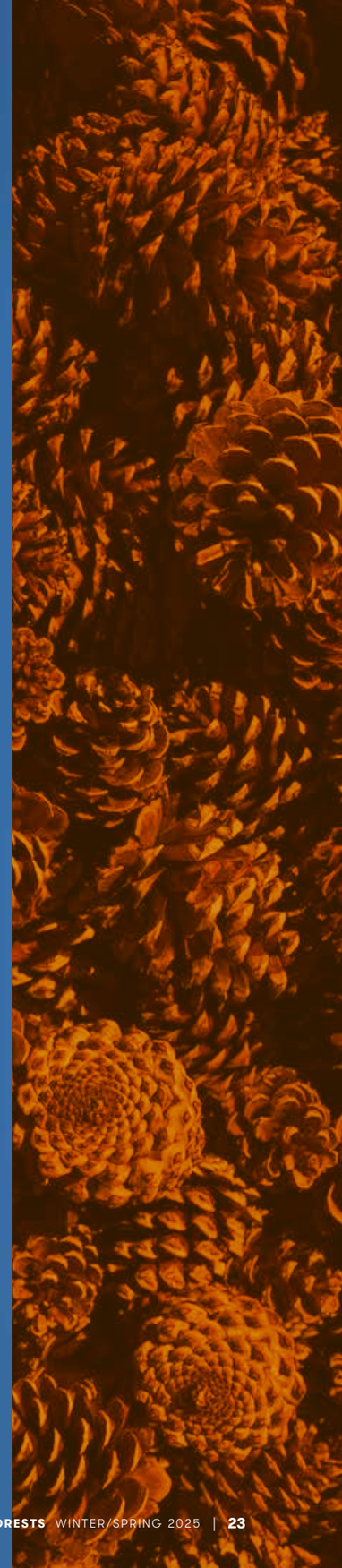
BY NICOLE GREENFIELD

"I love trees because they're a living species," tree climber Aspen Bartels says. "You're really connected to them while you're up there. You feel them moving in the wind. There's a lot of trust that goes along with climbing those trees."

MICHAEL SHAINBLUM / AMERICAN FORESTS

ASPEN BARTELS LIKES TO MOVE. The North Carolina-based arborist and competitive tree climber just finished his second year traversing California's mountains, helping to gather cones from the state's trees. Bartels drives his van up to four hours to reach each day's designated collection site. The 2024 collection season particularly kept him on his toes.

"This year's cone collection has been fast paced," he said last fall. "You're just kind of taking it as it comes. You almost don't know where you're going to be going until the end of the day, and then you're packing up your stuff and driving there. It's really exciting to see new places all the time."



Bartels is one of dozens of climbers from across the country who make an annual migration to California to scale trees and collect cones to restock California's seed supply — all in an effort to provide hope for the state's forests.

When he's in a tree, Bartels also likes to move. He starts at the top, up to 200 feet in the air, and hops side to side around the tree. For species with larger cones, like Ponderosa pine, he grabs the cones off the branches, dropping them to collectors on the ground below. He especially likes the freedom of being able to climb without a chainsaw, a tool he regularly uses for his residential tree work in North Carolina. He likens California's conifers to a big jungle gym, and his favorite is the Ponderosa pine due to its spread-out cone clusters.

"You're just jumping around and getting to move a lot in the tree, which I like a lot," he says. "I don't really want to stay in one spot. I want to be activating my body in that way."

But amid all the movement, Bartels is dedicated to pausing and taking it all in: "I always get to the top, and I start to look around. I want to look at the views. It's a different perspective that you really can't get from the ground."

This past fall, Bartels' views were often of charred landscapes. His climbing and collecting efforts for several days were in Northern California's Eldorado National Forest, where a decade earlier, the King Fire blazed through more than 63,000 acres of national forest, and an additional 34,000 acres of private timberlands, making it one of the first large-scale high-severity fires in the region. Then, in 2021, the Caldor Fire came through and scorched more than 220,000 total acres over a two-month span, more than double the area of the King Fire.

In recent years, the scale and severity of California's wildfires have greatly escalated, deforesting millions of acres that, without human intervention, are unlikely to regenerate in our lifetimes. And the wildfire threat only stands to deepen as climate change intensifies. To help the restoration process, American Forests has spearheaded

ABOVE: ANDREW STUDER / AMERICAN FORESTS; FACING PAGE: MICHAEL SHAINBLUM / AMERICAN FORESTS

Top: The King and Caldor Fires blazed through California's Eldorado National Forest and surrounding private lands, in 2014 and 2021 respectively, burning more than 317,000 acres. Right: Bartels packs a rope after climbing down a tree. Climbers will shoot or throw up weighted ropes multiple times until they find a sturdy branch that can bear their weight and movement while they are up in the tree.

American Forests, along with the U.S. Forest Service, the California Department of Forestry and Fire Protection, and other partners, collected an incredible

11,330 bushels

of cones across California in 2024,

a 275% increase

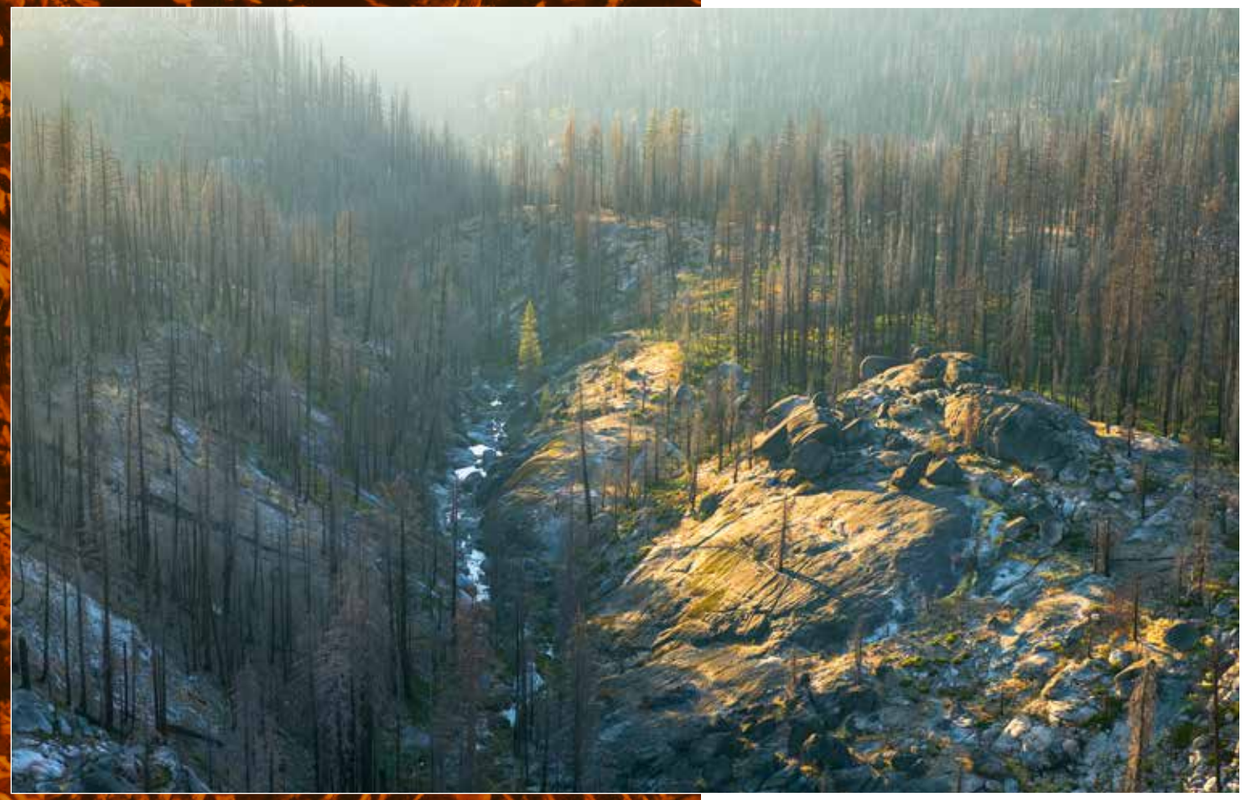
from the previous season. For context, that's enough cones to grow around

57 million seedlings,

enough to replant up to

a quarter of the more than 1.5 million acres

of forests the state lost to high-severity wildfires between 2019 and 2021.



TOP LEFT: MICHAEL SHAINBLUM / AMERICAN FORESTS; BELOW: ANDREW STUDER / AMERICAN FORESTS

a collaborative effort with partners — including contractors like Bartels, who works with Sierra Cone, LLC, and other tree climbers — to collect the seeds in cones from the state's existing trees and replant the landscape — with a focus on making the forests more resilient in the future.

THE NEED FOR SEED

When it comes to the urgency of cone collection, Melissa Paulsen, who manages Northern California's reforestation efforts for American Forests, is clear: "The need for reforestation on our state's public and private lands is huge — and we don't have the seed in our seedbanks to do it."

This seed shortage is directly tied to a lack of cone collection efforts robust enough to match the pace of reforestation needed after years of unprecedented, large-scale, high-severity wildfire events. These fires burn the cones and the seeds inside them, which would otherwise naturally regenerate those areas.

"The species of trees that we have in these forests can only spread their seeds themselves so far," explains Leana Weissberg, American Forests' California director. "So when we look at these patches of 30,000 acres or more, there really is no way for living trees at the edge of those patches to seed into the interior."

Such wildfires are driving 81% of reforestation needs across the country. And California alone has more than 1.5 million acres that require restoration — a number that's rapidly growing. California's forests are invaluable, providing wide-ranging ecological, economic and recreational benefits. Critically, they are responsible for supplying 60% of the state's water. To save these crucial resources, the state must quickly increase its rate of reforestation to address the backlog.

That's where cone collection efforts come in. To increase seed supply, land managers need to manually gather and store as many seeds as possible. By collecting cones from the right trees at the right time, restoration managers can maximize that supply, which will eventually become planted seedlings.

But trees' cone production can be unpredictable: The number and quality of the cones that the trees produce vary widely from season to season. What's more, some trees take multiple years to grow mature cones, and other trees may not even produce any cones at all some years. The impacts of climate change and wildfire damage exacerbate this fluctuation, making it all the more critical to seize the opportunity to collect as many cones as possible during the brief period in which they are available.

And they were certainly available this past fall: California's trees, and its Ponderosa pines in particular, produced a large or "bumper" crop of cones. It was quite likely the best crop the state has seen in decades — and American Forests, along with the U.S. Forest Service, the California Department of Forestry and Fire Protection (CAL FIRE), and other partners, were ready for it. Thanks to their focus on coordination, education and workforce development over the past few years, they collected an incredible 11,330 bushels of cones across California in 2024, a 275% increase from the previous season. For context, that's enough cones to grow around 57 million seedlings, enough to replant up to a quarter of the more than 1.5 million acres of forests the state lost to high-severity wildfires between 2019 and 2021. What's more, voluntary reports show that private industry collected an additional 8,670 bushels of cones. Taken together, the 2024 totals have the potential to reforest close to 700,000 acres.

Facing page, top: Melissa Paulsen, American Forests' Northern California reforestation manager, marks a tree for cone collection in California's Eldorado National Forest. Bottom: Large-scale high-severity wildfires are driving 81% of reforestation needs across the country. And California alone has more than 1.5 million acres that require restoration — a number that's rapidly growing.

"The conditions alone don't get record numbers of cones to the nursery or seeds sown for restoration," says Weissberg. "Our success this year was predicated on having the right capacity, mechanisms and collaborations in place to produce wins on public and private lands."

The cone collection process is an elaborate one, and it begins long before the tree climbers and cone gatherers ever set foot in the forest. In the months leading up to the narrow collection window when the cones are ripe for picking, restoration managers begin finding and mapping trees with significant numbers of cones. They then monitor the trees, aiming to gauge the quality of the cones, using a cone cutter to slice samples in half to determine if the seeds look healthy and viable, and assess their maturity. Green cones need to start browning — an indicator of ripeness — and the seeds inside need to be fully developed before they are ready for climbers to collect them from the trees. But if they wait too long, the cones will have opened on their own and released the seeds.

Cone collection crews send their bushels of cone to the nursery for processing and storage. Cones from the Eldorado National Forest end up at the Forest Service nursery in nearby Placerville, Calif. But Paulsen highlights the need for patience, especially after an exciting bumper crop year.

"It can be really easy to inundate your nursery with more cones than they can handle, so it's important to coordinate a slow trickle of thousands of bushels of cones into our nurseries," she says.

Below: Trees' cone production can be unpredictable, and the impacts of climate change and wildfire damage exacerbate this fluctuation, making it all the more critical to seize the opportunity to collect as many cones as possible during the brief period that they are available.

Ultimately, many of the seedlings the Placerville nursery grows from the seeds sourced from Eldorado National Forest will help replant acres impacted by the Caldor Fire.

A STATE-WIDE EFFORT

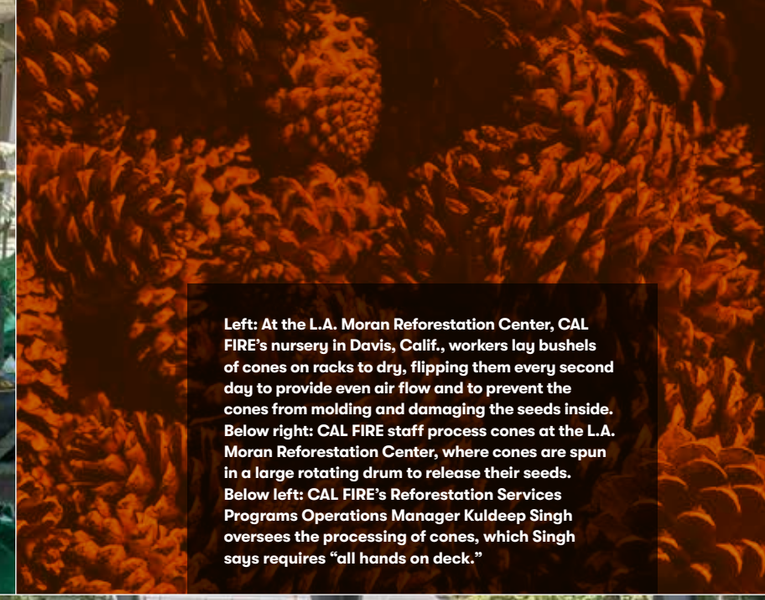
The Eldorado National Forest is one of many locations across California that experienced the flurry of cone-collecting activity last fall. CAL FIRE managed other collections, on both state and private forest lands, while the Forest Service and other partners carried out collection efforts in other California national forests.

Unlike the cones from the Eldorado National Forest, the state and private forest cones headed to the L.A. Moran Reforestation Center, CAL FIRE's nursery in Davis, Calif., where the number of staff swelled with temporary workers to help process the cones and extract their seeds.

"We do our best to get the cones within the same collection day, or the next day," says Reforestation Services Programs Operations Manager Kuldeep Singh, who helped reopen the facility in 2017 after it was shuttered for more than a decade. And when the trucks roll in with the cones, it's "all hands on deck," he says.

In 2024, CAL FIRE's seed bank received 4,630 bushels — a major shift from the 230 bushels it processed in 2023.

Once the bushels are unloaded, workers at L.A. Moran begin by laying the bushels of cones on racks to dry, flipping them every second day to provide even air flow and to prevent the cones from molding and damaging the seeds inside. After about a



Left: At the L.A. Moran Reforestation Center, CAL FIRE's nursery in Davis, Calif., workers lay bushels of cones on racks to dry, flipping them every second day to provide even air flow and to prevent the cones from molding and damaging the seeds inside. Below right: CAL FIRE staff process cones at the L.A. Moran Reforestation Center, where cones are spun in a large rotating drum to release their seeds. Below left: CAL FIRE's Reforestation Services Programs Operations Manager Kuldeep Singh oversees the processing of cones, which Singh says requires "all hands on deck."

LEFT AND FACING PAGE: ANDREW STUDER / AMERICAN FORESTS

ABOVE: MICHAEL SHAINBLUM / AMERICAN FORESTS; LEFT: ANDREW STUDER / AMERICAN FORESTS

week on the racks, the cones go into a kiln to complete the drying process and help them flare out, before heading into big, green tumblers to spin until they release their seeds and separate. The seeds then enter small tumblers to remove any remaining debris (though the more delicate seeds of certain species, like incense cedar, require hand-cleaning instead). Finally, Singh and his team x-ray the seeds to ensure their embryos remain intact.

Seeds are transferred to long-term storage and only removed when needed for seedling orders. Singh explains that there is an intricate process of preparing the seeds for sowing and germination that includes mimicking their natural process using different temperatures as a proxy for various seasons. Nursery staff aim to find an exact seed zone match for requested seedlings and often employ a future climate-modeling tool that helps determine the best fit.

The L.A. Moran nursery's seedling output has increased dramatically in recent years, from 5,000 seedlings in 2018 to 80,000 in 2020. These days, Singh reports that it's growing 290,000 of them every year — and his team has a goal of eventually reaching 1 million seedlings annually.

"I think the main reason CAL FIRE, or the state, is into reforestation is we want to leave the legacy for our future generations," Singh says. "We got it from our older generations, they got it from theirs. And I think we have no right to spoil the forest we have for the future generations."

Top left: Climbers can reach several hundred feet when scaling California's conifers to collect cones for the state's reforestation efforts. Facing page, bottom: "If the cooperation is there, and the awareness is there, and the resources are made available, I'm pretty sure that California will be in the right spot within a few years to meet its obligation to maintain its natural forests," says Singh.

A COMMUNAL EFFORT TOWARD A COMMON GOAL

Back in Eldorado National Forest, Jesse Cone, a silviculturist with the Forest Service, stresses the importance of reforesting the Caldor burn scar with local seed from the trees that remain. The wildfire "burned a hole through the heart of the Eldorado National Forest," he says. About 70,000 acres of the blaze was high-severity, which left very little tree canopy in its wake.

After the devastating 2021 wildfire season, a range of efforts by a variety of actors have started to address the massive need to restore California's forests.

The REPLANT Act passed in November of that year, providing the Forest Service with additional resources to work towards reforesting 1.5 million acres in the state's national forests over a 10-year period. A couple years later, American Forests joined forces with the agency through the REPLANT Act to help scale up its post-wildfire reforestation efforts.

Around the same time, the California Reforestation Pipeline Partnership, a strategic collaboration

> "The conditions alone don't get record numbers of cones to the nursery or seeds sown for restoration. Our success this year was predicated on having the right capacity, mechanisms and collaborations in place to produce wins on public and private lands."
>
> — LEANA WEISSBERG, CALIFORNIA DIRECTOR, AMERICAN FORESTS

Above: Cone Camp participants use a cone cutter to slice samples in half to determine if the seeds look healthy and viable. Cone Camps are helping to train new foresters and establish a cone collection and seed supply knowledge base. Right: Attendees of the 2024 Cone Camp work with a slingshot during fieldwork.

between CAL FIRE, the U.S. Forest Service Region 5 and American Forests, was created in 2022 to generate more cooperation amidst the groups and organizations working to increase the pace of reforestation on public and private lands, with a focus on closing critical knowledge gaps and expanding the reforestation workforce.

Coordinating cone collection is just one of the ways the members of the California Reforestation Pipeline Partnership have worked together to address and remove barriers to reforestation.

"American Forests has really done a marvelous job of bringing all the stakeholders together," CAL FIRE's Singh comments. "Before we were operating in silos."

Indeed, collaboration and communication are key to successful reforestation, says Shelley Villalobos, manager of the Reforestation Pipeline Partnership with American Forests: "California's forested landscapes have changed so much in recent years. It's been heartbreaking. We are awash in wood from fire, and so many watersheds are drastically altered. There is no cookie-cutter way to restore a forest because each forest is unique. By inviting folks active in reforestation to get together, we're doing a couple things — generating a community with shared purpose but also welcoming the diversity of perspectives that will be critical moving forward."

Emphasis on collecting cones and growing seed supply has diminished in recent decades, leading to a lack of expertise about the process and a generation of new foresters who have little understanding about it. Because of California's vast reforestation needs and the critical cone collection windows that exist, the Reforestation Pipeline Partnership has committed to building up that knowledge base. Last year's cone collection triumph would not have been possible without the people the partnership helped train to carry out the work.

In the summer of 2023, the Reforestation Pipeline Partnership hosted three Cone Camps across California — a first of its kind training initiative. Over two days — one in a classroom and one in the field — more than 200 participants learned from experts about the range of elements that go into the cone collection process, from surveying to tree climbing. Last year, Cone Camp held six training sessions in different forests across the state, with 170 participants total. Beyond the technical education, Cone Camp attendees have the opportunity to build community and share excitement about reforestation.

THIS PAGE: LEON VILLAGOMEZ / AMERICAN FORESTS

Eva Lopez is a reforestation coordinator in the southern Sierra Nevada mountains through American Forests' Cone Corps program, a workforce development program created as part of the Reforestation Pipeline Partnership to not only fill immediate employment gaps in reforestation efforts, but also to train up the next generation of career foresters who will have a hand in helping California meet its restoration goals. Lopez says Cone Camp was a great place to learn and practice technical skills, from cone cutting to determining seed viability when cones mature. "Trying to figure out the timing of that sometimes seems more of an art than a science, because you can't look inside the cones from afar," she says. "Not only do people learn the skills, but they can also learn some of that insider knowledge."

Workers like Lopez from the California Cone Corps played an important part in 2024's momentous cone collection effort, their work supporting 30% of all the state and federal bushels collected during the season.

The reforestation-centered partnerships and training programs are inspiring, but CAL FIRE's Singh encourages patience. "It's not an overnight operation. It will take some time, but I think we are moving in the right direction."

Singh's outlook is hopeful. "If the cooperation is there, and the awareness is there, and the resources are made available, I'm pretty sure that California will be in the right spot within a few years to meet its obligation to maintain its natural forests."

One thing is certain: Bartels and his fellow tree climbers will be ready, vans packed with gear, and waiting to do their part in making reforestation happen.

Nicole Greenfield is a New York-based freelance writer whose work focuses on the intersection of climate, environment and health.

To learn more about our cone collection efforts in 2024, watch the short film "Hope in these cones: A California reforestation story" at americanforests.org/SeizingSeed or by scanning the QR code.

"There is no cookie-cutter way to restore a forest because each forest is unique. By inviting folks active in reforestation to get together, we're doing a couple things — generating a community with shared purpose but also welcoming the diversity of perspectives that will be critical moving forward."

— SHELLEY VILLALOBOS, MANAGER OF THE REFORESTATION PIPELINE PARTNERSHIP, AMERICAN FORESTS

branching out

Growing careers and spreading equity through urban forestry

BY NICOLE GREENFIELD

TURNING DOWN A JOB was the best decision Kris Cameron ever made. He'd finally gotten an offer from a restaurant supply wholesaler in April 2023 after a long, frustrating search. Although he was eager to secure a paid position, he felt anxious about his lack of training and job experience. He had also been accepted into an eight-week, paid career training program that was scheduled to begin on the same day as the supply company role. After a lot of deliberation and some gentle encouragement from his cousin, Cameron chose the training program over the job — a decision that changed his future.

Pages 36 and 37: Kris Cameron learns about tree planting and urban forestry in Providence, R.I. In fall 2023, he joined the Green Reentry Job Training program through Garden Time, a local nonprofit dedicated to preparing incarcerated and formerly incarcerated individuals for green industry jobs.

"I fell in love with it," he recently reflected. "It was everything I was looking for in my life."

Cameron grew up in Tampa, Fla., where he traded his last two years of high school for a life in the streets, dealing drugs — a move that ultimately landed him in prison. After he was released in 2020, he knew a fresh start would require a major change. So he moved north to his birth city of Providence, R.I., to be close to family. It was not long after his relocation that Cameron applied for the Green Reentry Job Training program at Garden Time, a local nonprofit dedicated to preparing incarcerated and formerly incarcerated individuals for green industry jobs.

The program supported Cameron in multiple ways, from helping him craft a professional resume to teaching him about proper nutrition for his workday. The organization's Co-Founder and Executive Director Kate Lacouture even helped him get his Florida driver's license reinstated.

"They helped me out so much. I didn't even have a professional email when I started," he says.

As for the classwork part of the program, Cameron, now 43 years old, jokes that it forced him to turn his brain back on after many years. He soaked up the education, learning about tree species and identification, tree planting and care, climbing, chipping, safety protocols, environmental justice, and more. Cameron eventually landed at Groundwork Rhode Island, a Garden Time partner organization, as part of a tree-planting crew. And just last fall, less than two years after starting the Green Reentry program, Groundwork promoted him to foreman.

"I'm a thriving, productive member of society now," Cameron says. "When I went to the Green Reentry program, I was a lost cause. Now, I'm an inspiration to myself."

Above: "He got his dream job. He's a leader there. He's just really doing well," Garden Time Co-Founder and Executive Director Kate Lacouture says of Cameron. After completing Garden Time's Green Reentry program, Cameron landed at Groundwork Rhode Island, where he was recently promoted to foreman.

DIVERSIFYING AN INDUSTRY... AND THE WAYS TO ENTER IT

Urban forestry requires trained workers with specific qualifications related to planting and caring for trees. There is a shortage of these skilled employees as the older, white men who have historically dominated the field retire. Not only are seasoned experts aging out of the profession, but as climate impacts like extreme heat grow, so too does the need for people who can help expand and maintain tree cover in cities across the country. An estimated 173,000 new tree-care jobs need to be filled by 2028.

American Forests is invested in closing this employment gap by helping to create a more robust — and a more diverse — urban forestry workforce. In March 2023, it awarded grants to three Tree Equity Workforce Network members to implement the organization's Arboriculture Pre-Employment Curriculum, which guides

ALL PHOTOS: HANNAH GREGORY / AMERICAN FORESTS

Kris Cameron used to have trouble envisioning how to make an exit from the lifestyle that eventually landed him in prison. Garden Time was the answer he was looking for: "I just had to show a leap of faith," he now says.

programs in training those who are underrepresented in the tree-care industry. The organization leading the program Cameron participated in — Garden Time — along with The Works in Memphis, Tenn., and Tucson Clean and Beautiful, in Tucson, Ariz., each received $100,000 from American Forests to expand or pilot tree-related job training programs.

> "I'm a thriving, productive member of society now. When I went to the Green Reentry program, I was a lost cause. Now, I'm an inspiration to myself."
>
> — KRIS CAMERON, GREEN REENTRY JOB TRAINING PROGRAM GRADUATE, GARDEN TIME

Below: The need for urban foresters is on the rise, and so are training opportunities for a new generation of workers who live in the areas that need trees the most. Workforce development programs in cities across the country take a whole-person approach, covering basic needs and developing certain "life skills" before even beginning to teach the specifics of tree care.

Hannah Gregory, senior manager of Career Pathways at American Forests, stresses the value of the groups' diverse approaches: "Every community has similar challenges with the urban forestry workforce, but different populations, climates and needs. We rely on our partners' expertise and deep community knowledge to support the best approach for their community."

The grant funding supported Garden Time in incorporating higher-level technical tree training into its Green Reentry program. Meanwhile, Tucson Clean and Beautiful, a 40-year-old organization that focuses largely on urban forestry and shade equity, with special attention to rainwater harvesting, was able to offer a part-time six-month pre-employment program for climate-vulnerable young people from areas with low tree canopy cover. And the training at The Works, a well-established organization that meets housing and other community needs, spoke to its full-tree philosophy by incorporating nursery work, milling and lumbering into the curriculum.

CONNECTING TREE EQUITY AND WORKFORCE DEVELOPMENT

Ronrico "Rico" Reames never pictured himself working with trees, gaining knowledge about them, or understanding their importance. And he certainly never imagined finding himself in Overton Park's Old Forest, in the heart of his native Memphis, Tenn., hugging a tree. But he did all of that — and more — as part of The Works' Tree CPR training program led by Kayla Stuart.

"I didn't really even know we had trees until the class came around," he says, referencing neighborhoods like Klondike in North Memphis where tree cover is extremely low, resulting in higher temperatures and poorer air quality. "When everybody got through, we wanted to save or plant a tree."

Memphis has a population of roughly 700,000 people, about 70% of which is Black and about a third of which lives below the poverty line. The city is home to some of the poorest zip codes in the country, with high rates of unemployment, the result of decades of systemic injustices. And like in most urban places in the United States, those areas of Memphis have far fewer trees than the whiter, higher-income neighborhoods.

In fact, across U.S. cities, lower-income communities tend to have 26% less tree cover and are almost 6 degrees Fahrenheit hotter than wealthier ones. Communities of color — regardless of

Top: Kayla Stuart, program director, leads a session of The Works' Tree CPR workforce development program in Memphis, Tenn. Here, she teaches participants about Tree Equity Scores, a critical tool created by American Forests to show which communities need trees the most — and help ensure the proper resources reach them.
Bottom left: Stuart struggled with the decision to move nearly six hours from her family for a few months, but knew having the opportunity to run the Tree CPR program would be worth it. But she didn't expect just how life-changing it would be, or the extent of the impact the cohort of 12 would have on her. The feeling is mutual, according to Ronrico "Rico" Reames (front left), who is currently incarcerated. From back at her Knoxville home, Stuart continues to support him with everything from encouraging phone calls to practical tree-care information.
Bottom right: Shauna Acker was pregnant with her second child when she joined 11 other participants in the Tree CPR workforce development program. Now, her two children inspire her future career in urban forestry.

Angelantonio Breault, climate equity workforce and education director at Tucson Clean and Beautiful, teaches a group in Tucson. "To retain and sustain an effective and engaged workforce, we've seen that they need to be connected not only to peer-to-peer and mentor support, but they also need to be connected to the land and the things that aren't work," he says.

The Tucson Clean and Beautiful's Clean and Beautiful Climate Equity Workforce Leaders program offers young adults the chance to explore careers in urban forestry. During one session of the program, participants helped plant trees in Tucson residents' yards, focusing on neighborhoods with low Tree Equity Scores.

Above: A critical piece of urban forestry workforce development programs is helping participants build foundational skills, like problem solving and teamwork, in addition to teaching more technical tree-care content. Here, Reames (left) collaborates and works alongside a fellow program participant.

income — tend to have 38% less tree cover and are almost 13 degrees hotter than white communities.

American Forests is leading a national Tree Equity movement aimed at addressing this social justice issue. Tree Equity is ensuring all people, regardless of race or income, have access to the benefits of trees. But, Tree Equity is about more than just planting trees in the neighborhoods that most need them. It is also about ensuring the individuals living in those communities that lack jobs are provided paid opportunities to care for those trees.

"We know that neighborhoods of color and lower-income neighborhoods have less tree cover," says Vikram Krishnamurthy, senior director of American Forests' careers and opportunities work. "We also know there are long-standing inequities when it comes to employment. Our goal is putting those two things together, engaging new professionals in urban forestry who are from the very areas where we need trees the most."

The Tree CPR program aims to do just that. After 37-year-old Shauna Acker moved to Memphis from Chicago 14 years ago and became a mother, she found herself more aware of the impacts of climate change and of the tree-cover inequities in both cities she has called home. She was pregnant with her second child when she learned about the job training program, and she decided to apply.

"No one thought that a group of African Americans from the City of Memphis is going to want to learn about urban forestry and agriculture. But we did. We came every day, and we participated," she says. Acker is currently focused full-time on caring for her young children. But when she decides to rejoin the workforce, she is eager to find a job in urban forestry.

Back up north, Cameron is doing his part to expand Tree Equity by planting trees with Groundwork Rhode Island in low-cover areas like South Providence and Central Falls. It's a dream job that he says he prayed for. He feels like he's getting paid to learn and is motivated by getting to do good, helpful work in the community: "I feel like I'm a part of something that's bigger than myself."

IMPLEMENTING A WHOLE-PERSON APPROACH

Tree Equity can't be achieved without a workforce to make it happen, and developing one that's passionate and effective requires an intentional, holistic approach that prioritizes people and meets individuals where they are.

Urban forestry workforce development and training has historically been focused on the

Above: "This is it. I found it. This is exactly what I want to do," says Patsy Dennis (right, in glasses), a senior at the University of Arizona. Until the arboriculture part of Tucson Clean and Beautiful's workforce development program, she had never really found something she was confident about pursuing.

profession of tree care and arboriculture, explains Krishnamurthy. But in reality, urban forestry is an interdisciplinary professional practice that involves the collaboration of city governments, engineers and planners, communities and citizen advocates, neighborhood groups, volunteer groups, and faith groups.

As a result, he says, the skillsets of urban foresters, particularly young people entering the field, really need to be diversified: "It's not just about tree care and tree knowledge, or even the care of collections of trees. It's a practice that involves cultural competencies."

For that reason, a central goal of all three training programs is to strengthen life skills, often referred to as soft skills, such as problem solving, public speaking, navigating change, building resilience, fostering relationships and honing creativity. These lessons are foundational for a successful career, in tree care or not.

"With green jobs or arboriculture, and within workforce development, we take this kind of cog-to-the-machine approach, where we want to train people with these technical skills to be able to fill this role within an institution," says Angelantonio Enriquez Breault, climate equity workforce and education director at Tucson Clean and Beautiful. "We're way more interested in cultivating connected, informed and community-oriented individuals."

This emphasis on personal development is especially important for young participants in programs like Tucson Clean and Beautiful's pre-employment program, he adds. Unlike older generations, they are likely to change jobs and even careers more frequently, and as they do he hopes the core takeaways from the program will guide them. What's more, not all graduates end up in the tree-care industry — at least not right away. But they emerge with transferable life skills, as well as knowledge about and deep appreciation for trees.

"The metrics we're using to define success within these fields, and within these communities, don't really capture even more than a fraction of the story," Breault says.

But even before the programs offer any help with life skills, they first need to ensure their trainees' basic needs are met and logistical employment barriers are removed. This assistance can include anything from rent support and cold-weather gear to childcare, transportation and GED support.

The goal is simple, though, according to Tia Washington, American Forests' senior manager of Career Pathways who focuses on case management: "How can we support people to be their best selves?"

These wraparound services, which are tailored to individuals' unique needs, address immediate challenges and barriers that may otherwise deter or prevent people from taking advantage of a training opportunity. It works to level the playing field and helps make people feel welcome and safe.

"My biggest thing is the humanity of how wraparound services support individuals that are underrepresented in the tree-care industry," Washington says. "Who is better invested in a community than the people living there? This is how you grow your own community."

Garden Time Executive Director Lacouture also highlights the importance of follow-up with training participants and shares that Garden Time offers an incentivized monthly wellness support group. "We just try to stay with people and help them. It's one thing to get a job — it's a lot harder to keep a job."

Washington notes that while the training initiatives themselves are focused on employment and careers, the actual work is very people-centered. Krishnamurthy agrees, concluding that "the focus on people is as important as our focus on the trees in this case."

Above: Garden Time helps support Providence, R.I.'s urban forestry goals by participating in planting events with its partner Providence Neighborhood Planting Program, which helps to plant roughly 500 street trees, prioritizing neighborhoods with the lowest tree canopy cover.

CHANGING COMMUNITIES, CHANGING LIVES

Cameron believes that programs like Garden Time would make a significant impact all over the country. "I feel like they really need more programs out there like this, for people being formerly incarcerated and want to make a change in their life, but don't know the right steps," he says.

"My biggest thing is the humanity of how wraparound services support individuals that are underrepresented in the tree-care industry. Who is better invested in a community than the people living there? This is how you grow your own community."

— TIA WASHINGTON, SENIOR MANAGER OF CAREER PATHWAYS, AMERICAN FORESTS

Reames, who was also previously incarcerated — for 17 years — declares without hesitation that the program altered the course of his life.

"I've been shot in the face, I've been stabbed. I have been through it," he says. "That class, it really just saved my life." He says that programs like Tree CPR embody true rehabilitation — it was the authentic help he'd been needing and searching for. "That class changed me mentally, spiritually."

After graduating in November 2023, Reames had a job in urban agriculture lined up, but ended up reincarcerated. Kayla Stuart, who leads the Tree CPR program, keeps him engaged with reading materials on urban forestry, tree planting, tree canopies, urban soils, tree biology, urban wood manufacturing and related topics.

"Kayla's still pushing for me," says Reames, who is grateful for Stuart's support and remains determined to pick up where he left off once he is released.

"This opportunity with American Forests and the Tree CPR program that we built with Kayla is the sort of thing that young Memphians desperately need," says Mike Larrivee, director of regenerative initiatives at The Works. "It's simply the exposure to opportunities that they, by and large, had no idea existed. And Kayla is a tree person, but she also gets people at an incredibly deep level."

The program was, in many ways, life-changing for Stuart, too. She says that the impact that the individuals in that first cohort had on her personal life was more immense than she could have ever imagined. They saw and respected and trusted her — almost immediately. After only knowing her for a short time, they truly valued her, which was something she hadn't experienced in a job before.

"They just believed in what we all were there to do: to grow and learn and be better stewards of our environment," she reflects. "And sharing that with a group of individuals that look like me was so powerful and so moving."

In its call for applications for the Fall 2023 job training cohort, The Works received 600 responses in 24 hours for the Tree CPR program.

"The need here is just incomprehensibly great," Larrivee says. "The more of this we can do, the more impact we can have, the more jobs we can create, the more equitable we can make things for all Memphians."

HOPE FOR THE FUTURE

These days, when Acker thinks about urban forestry, she envisions a better future for her two young children. Similarly, Reames takes pride in sharing his new passion for trees with his daughter. His favorite species is the sycamore.

Acker and Reames, and their fellow graduates of Tree CPR and other programs, entered these programs seeking a different path in life and financial security. They gained skills and resources, secured certifications and solidified connections.

But the impact of their participation in these programs, and of their entry into the urban forestry field, is bigger than these individuals. They are fostering community. They are inspiring the next generation. They are paving the way for Tree Equity in their cities.

"They feel like their grandkids are going to see these trees — and they can be proud about that," Lacouture says of Garden Time's Canopy Crew that travels around Providence to ensure its young trees thrive.

American Forests is working to replicate these successes in cities across the country with a new strategy to attract young people to urban forestry careers; build the knowledge, skills and expertise of local partners; and connect trainees to employers and available jobs. Sustaining people's livelihoods is crucial to sustaining tree canopy not just now, but for generations to come.

Cameron agrees: "I love being a part of something that's going to be around long after I'm gone."

Nicole Greenfield is a New York-based freelance writer whose work focuses on the intersection of climate, environment and health.

Top right: Cameron powers a cargo trike to help carry supplies during a fall 2023 training event. Bottom right: "I think that a lot of people come out of prison looking to give back to their communities," says Lacouture. "Planting trees is a tangible way that they can do that. They feel like their grandkids are going to see these trees, and they can be proud about that." Lacouture and Cameron have maintained a close relationship since Cameron graduated from Garden Time's Green Reentry program and secured a full-time job in the tree-care industry.

READER SURVEY

We want to hear from YOU.

We are committed to putting our resources and efforts where they are most needed and will have the greatest impact for our mission while addressing the most pressing needs of our time: climate change and social equity.

As part of this commitment, we're exploring new digital and interactive formats to share our stories and insights with you. To better serve you, we're taking a pause from publishing the Summer 2025 print edition of *American Forests* magazine. We will be focusing on fresh, interactive ways of delivering our stories right to your fingertips on americanforests.org, our social media channels and through our new email newsletter.

We want to hear from you! Let us know how you'd like to stay current on our most inspiring stories, innovative research and latest updates by taking our brief survey at **americanforests.org/ReaderSurvey or scan the QR code**.

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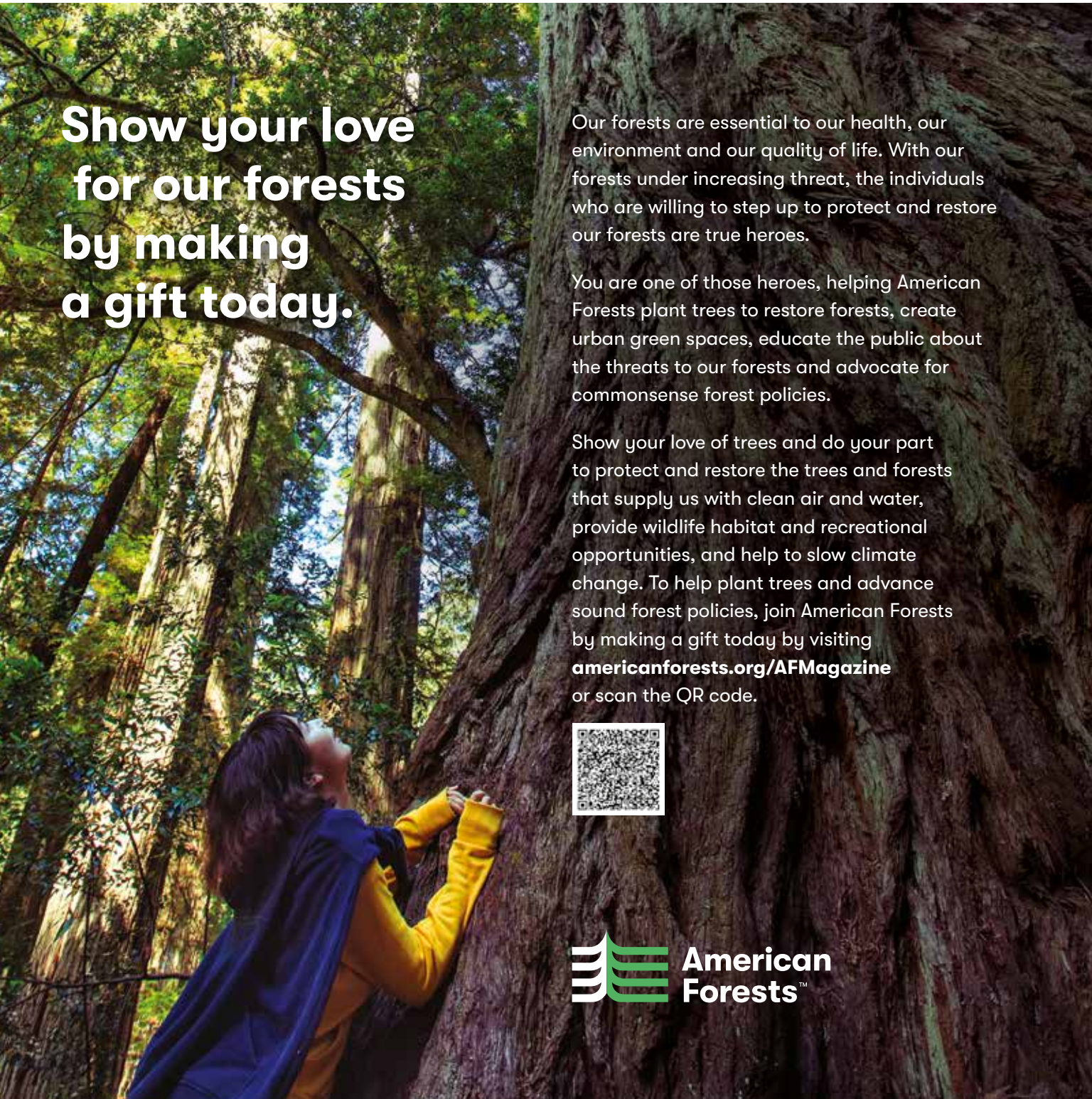

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