#### AMERICAN

FALL 2023

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### TREE EQUITY SCORE EXPANDS TO THE UK

In Sheffield, an industrial past gives way to a greener future

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#### Departments

VOL. 129, NO. 3

#### **2** Offshoots

A word from our president and chief executive officer

#### **4** Treelines

RIGHT: KEVIN ALEXANDER , PAUL ROGERS / AMERICAN

FROM LEFT TO COVER PHOTO:

**INNOVATION:** First-of-its-kind curriculum developed by American Forests and Weyerhaeuser teaches high school students about Tree Equity and green careers.

PLACE-BASED PARTNERSHIPS: New Washington State Tree Equity Collaborative makes first statewide commitment to elevate Tree Equity Scores.

**MOVEMENT BUILDING:** American Forests' Tree Equity Workforce Network seeks to fill a gap in the tree-care industry.

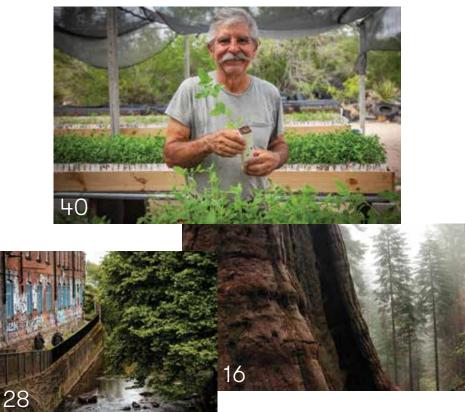
**HISTORY:** Planting efforts aim to restore the forest surrounding President Abraham Lincoln's boyhood home to its 1816 state.

**PARTNER PROFILE:** ZYRTEC<sup>\*</sup> partners with American Forests to extend relief beyond the allergy brand's products.

WASHINGTON OUTLOOK: American Forests works with lawmakers to outline priorities for the 2023 Farm Bill to expand policies to invest in seed supply.







### Features

#### 16 A giant task: fixing California's reforestation pipeline

By Liane O'Neill for other regions.

#### **28** Sheffield, City of Steel...and trees

By Lee Poston

#### **40** The life and times of Benito Trevino

By Lee Poston A native Texan's impact on conservation in the Rio Grande Valley has created a legacy for future generations.

## CONTENTS

FALL 2023

How innovative reforestation efforts in California are serving as a blueprint

American Forests and partners in the United Kingdom bring the groundbreaking Tree Equity Score tool across the pond.

# offshoots



Top: Planting 500 nillion new trees would bring every neighborhood in every city to a Tree Equity Score of 100. Bottom: As tempera tures continue to rise and summers become hotter. neighborhoods that lack trees and already face greater health burdens will be disproportionally impacted.

#### We need Tree Equity for climate justice

BY JAD DALEY

ON THE HEELS of the hottest summer in recorded history, you are probably feeling grateful that trees are

a "magical device" to help protect our cities from climate change, neighborhoodby-neighborhood, cooling the air while scrubbing smog and carbon dioxide alike. In fact, trees are so magical, research shows that they make people happier and smarter simply by looking at them!

That's why American Forests believes it is a moral imperative for our organization and the nation to address the disproportionate prevalence of these life-saving devices in neighbor-

> hoods that are wealthy and predominantly white. With so much at stake, I'm very proud that this summer we have helped advance some of the biggest moves on Tree Equity yet.

Let's start with the hard realities of the inequitable

tree cover we have in our cities today. We recently released version 2.0 of American Forests' Tree Equity Score



tool with even better data and user options. Our latest data shows that the lowest-income neighborhoods in America have on average 26% less tree cover and are on average 6 degrees Fahrenheit hotter than higher-income areas. And neighborhoods with the highest concentration of people of

color – regardless of income levels - have on average 38% less tree cover and are on average 13 degrees Fahrenheit hotter than neighborhoods with the lowest concentration.

Because of the way urban heat islands function to store and radiate heat, extra heat in these neighborhoods is sustained through the night. Especially in homes with no air conditioning, such prolonged heat stress puts people at risk for heat-related illness and death. Research led by Duke University projects that heatrelated deaths in the United States - already more than 12,000 annually - could reach nearly 100,000 per year by 2100. This immense threat will be far greater in the neighborhoods that lack trees and already face greater health burdens.

We need a holistic response to such a dire threat, which must include bringing more trees to all parts of our cities, especially those at highest risk. To that end, American Forests is proud to have helped catalyze a swelling Tree Equity movement across America. Community-based organizations in the most impacted neighborhoods are leading the action in concert with mayors, municipal agencies, companies, nonprofits and civil society actors such as churches.

Tree Equity Score is part of our movement leadership, giving these diverse actors the ability to prioritize where to invest and how to benchmark their impact. Tree Equity Score 2.0 makes this tool even more valuable for needs like planning and prioritizing within a city-wide Tree Equity program.

The burgeoning Tree Equity movement also got a big lift this summer from the Inflation Reduction Act enacted in the last Congress. Thanks to leadership from Senator Cory Booker, Senator Debbie Stabenow and

Representative Donald McEachin, this legislation provided a worldleading \$1.5 billion in grant funding for climate and equity-focused urban forestry. The first \$1 billion in open grants was awarded this summer after an intensive, competitive process. The interest in this funding was so strong that applicants temporarily crashed the Forest Service servers.

American Forests will be working to help grantees design and implement successful Tree Equity programs using our tools like Tree Equity Score, our climate-informed urban forestry guidance and much more. We are also playing a special role through our new Tree Equity Catalyst Fund, in which we help cities, frontline organizations and non-traditional partners - like youth and faith organizations – to access funding and technical assistance to enter into this work.

America is ready for Tree Equity. We are heartened by a poll American Forests helped to commission showing 89% support across party lines for urban forests as a natural climate solution. People understand and value the way that millions more urban trees will provide cooler temperatures and cleaner air. We are already working to make sure that we build public and political support to sustain this kind of public investment into the future, and we appreciate all that you do to help make American Forests' Tree Equity leadership possible.

man A. Daley III

For more news and updates from Jad, follow him on X (formerly Twitter) @JadDaley



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INFORMATION TO AMUSE, ENLIGHTEN AND INSPIRE

#### INNOVATION

#### **American Forests and** Weyerhaeuser team up to **implement Tree Equity curriculum**

ON A WINTER DAY in 2022 in Ruston, La., Dr. Darrell Street crouched down in a large hole in the ground and looked up at the circle of high school students around him. They leaned on their shovels as he asked what they thought they should do next in the process of planting a large sapling. Should they just plop it in the hole, or did they need to do something else first?

*feelines* 

The students eagerly offered that they should measure the hole and then backfill with dirt to make it the right size before planting. It was a process they had learned as part of a new greening event focused on Tree Equity and tree-related careers organized by American Forests with the support of Weyerhaeuser, a sustainable forestry and wood products manufacturing

company with operations across the United States and Canada. The handson planting event at Ruston High School was the finale of a multiweek curriculum that guides high school students through an inquiry-based learning process about green jobs that protect and enhance our environment.

Weyerhaeuser approached American Forests with the idea after being im-



Ruston High School agriculture students plant a tree as part of the educational event with Weyerhaeuser employee volunteers. The students are the first to use American Forests' Tree Equity Curriculum: Exploring Green STEAM Careers, which includes lessons on the Tree Equity Score tool and designing tree-planting projects.



Dr. Darrell Street instructs students at Ruston High School on the proper procedure for planting trees on Dec. 8, 2022, at an event in which Weyerhaeuser employee volunteers joined the students to plant 33 trees at Duncan Park, in an area of Ruston, La. with a low Tree Equity Score, and then another five trees at the high school.

pressed by the organization's Tree Equity Score platform, which assesses tree cover in areas of the U.S. with at least 500,000 residents. As a company active in many smaller urban clusters and rural areas, Weyerhaeuser was interested in promoting Tree Equity in less populated places. The company also wanted to provide educational opportunities for rural youth to learn about careers in forestry and other aspects of the green economy.

The idea grew out of Weyerhaeuser's 3 by 30 Sustainability Ambitions, launched in 2020, which intensify the company's focus around three key areas: contributing to climate solutions, helping provide sustainable homes and supporting rural communities. The result of this collaboration - a modular curriculumtitled Tree Equity Curriculum: Exploring Green STEAM Careers – educates students about green jobs, guides them through collecting and analyzing Tree Equity Score data for their area, and has them participate in a hands-on greening project.

The curriculum includes five lessons and takes four to six weeks to teach in

entirety. In the first lesson, students identify their interests, strengths and skills, and think through which kind of job they might want to pursue. In the second activity, they determine their Holland's Occupational Personality Type by taking the "Find Your Green Jobs" quiz from Project Learning Tree. The third section covers ecosystem services and jobs that protect and enhance them. The fourth investigates the Tree Equity Score, including an exercise in which students work in groups to figure out which local Census block groups have a score lower than 80 — indicating a priority for more tree cover. This exercise culminates with the greening event. The fifth lesson has students reflect on what they learned and whether they might

pursue a green career.

The curriculum has been free online since going live in October 2022. American Forests and Weyerhaeuser chose three locations in which to officially pilot it: Ruston, La., and Tacoma, Wash., which implemented it for 200-250 students each in fall 2022

and spring 2023; and Natchitoches, La., which will do so this fall.

Weverhaeuser has long-standing operations and is active in all three communities. In Ruston and Tacoma, Weyerhaeuser employee volunteers came to classrooms to talk about their careers and also joined students at the tree-planting events.

"On planting day they're able to talk through why they're planting these trees and why the Weyerhaeuser employees are passionate about it," says Eboni Hall, American Forests' director of career exploration and development. "It's about being able to expose them to the green job opportunities in the field. A lot of students don't have that real-world, hands-on experience."

The curriculum is receiving positive feedback from participants and is attracting enthusiastic attention. Other partners have expressed interest in expanding the program, and American Forests has plans to implement the curriculum in Phoenix, Detroit, again in Tacoma and in other locations next year. 🐐

#### PLACE-BASED PARTNERSHIPS

#### New statewide collaborative aims to make Tree Equity moonshot a reality

WHEN SEATTLE hosted the 1962 World's Fair, it showcased America's aspirations for the Space Age. More than 60 years later, Washington's largest city was again the stage for the launch of another moonshot: achieving Tree Equity in the Evergreen State.

In 2021, a heat dome boosted temperatures in the area more than 30 degrees above average — a death sentence for some who lacked air conditioning and heat resilience. Low heat resilience can be magnified by insufficient tree canopy, and many of the more than 400 deaths attributed to the heat dome occurred in areas with not enough urban trees to make a difference.

According to American Forests' Tree Equity Score tool, nearly 85% of urbanized neighborhoods in Washington have inadequate tree cover. More than 2 million people have less than half the tree canopy needed to support the needs of their neighborhood. The City of Seattle assessed its urban trees and reported a net loss of 255 acres of tree canopy since 2016.

State and local leaders recognized the need for urgent action to increase tree canopy equitably and save lives in the future. With a shared ambition to boost Tree Equity in disadvantaged neighborhoods disproportionately suffering the negative effects of extreme heat, American Forests and the Washington State Department of Natural Resources gathered in April at Seattle's Roxhill Park to announce the launch of the Washington State Tree Equity Collaborative — the first statewide commitment to elevate Tree Equity Scores.

"We're going to collaborate to help build rigorous and inclusive urban forestry programs," Washington State Commissioner of Public Lands Hilary Franz told the crowd over children's shouts and laughter from the nearby playground. "It's not just about planting new trees. We must protect existing tree canopy as well. And that means developing a workforce...to advance equity."

Tree Equity Collaborative members make multiple commitments: to use the best available data and science (including American Forests' Tree Equity Score) to evaluate areas in greatest need of tree canopy cover; to seek funding and resources toward maintaining and increasing tree canopy cover in areas of

PAGES 6 AND 7: RACHEL DEPARTMENT OF NATURA





"We can all have the life-giving benefits of trees on a daily basis. We're going to make it happen in Washington State, and we're going to lead the country and the world on how to get this done with the right kinds of partnerships."

- JAD DALEY, PRESIDENT AND CEO, AMERICAN FORESTS

Facing page: American Forests President and CEO Jad Daley and Washington Commissioner of Public Lands Hilary Franz pause from shoveling mulch for a photo moment. Left: Seattle Parks and Recreation staff will assist with the maintenance of 40,000 trees and will plant an additional 40,000 trees in parks and natural areas over the next five years.

greatest need, with a focus on equitable distribution; and to develop a collective action plan to support a measurable improvement in Tree Equity in Washington's cities by 2030.

Among the first to sign pledges to join the Collaborative were Seattle Mayor Bruce Harrell, Tacoma Mayor Victoria Woodards, the Carl Maxey Center in Spokane, the 300 Trees organization in Bellevue and the Duwamish Alive Coalition. Mayor Harrell announced Seattle's plans to develop a Tree Canopy Equity and Resilience Plan, implement a policy that requires trees be planted for every site-appropriate tree that is removed from city property, and plant 8,000 trees on both public and private properties as well as an additional 40,000 trees in parks and natural areas. The plans also include performing important maintenance on 40,000 trees across the city.

In May, the city of Yakima received a \$20,000 grant from the Washington State Department of Natural Resources to develop an urban forest management plan, building momentum as the group grows in strength and shared ambition.

As unprecedented resources for urban and community forestry are allocated to cities, states and nonprofits across the country, opportunity abounds. "We can all have the life-giving benefits of trees on a daily basis," said American Forests President and CEO Jad Daley during the Collaborative launch. "We're going to make it happen in Washington State, and we're going to lead the country and the world on how to get this done with the right kinds of partnerships." **\*** 

#### **PUT STOCK IN FORESTS:**

And find a wealth of benefits for the short and long term

Your gift of stocks, bonds or mutual funds can plant a living investment of trees, to ensure forests thrive far into the future and provide the benefits of clean air and water to future generations.

With an outright gift of appreciated securities to American Forests, you may save on capital gains and income taxes, while protecting and restoring critical forest ecosystems. In 2018, the IRS declared that charitable donations from your tax-deferred IRA or 401(k) will be exempt from taxation up to \$100,000. Speak to your financial advisor about how you can generously support forest restoration, while minimizing or avoiding tax on distributions from those accounts.

Questions? contact Sarah Mitchell, Senior Director, Individual Philanthropy, at 202-737-1948 or smitchell@americanforests.org.

merican Forests cannot offer legal or tax advice. Please consult your awyer or tax advisor about the advantages of making a charitable gift f appreciated assets

#### American Forests"

A tree you plant today may outlive your grandch grandchildren's grandchildren. This Great Basin bristlecone pine is 5,067 years old, the oldest-kn

#### MOVEMENT BUILDING

#### **Tree Equity Workforce Network** offers crucial support for pre-employment programs

AROUND THE UNITED STATES, the tree-care industry is a promising but underrecognized employment option for many workers without higher education or specialized training. These jobs are stable and well compensated, offer opportunities for advancement, and contribute to the fast-moving green economy. Yet many communities that could benefit most from such attractive job opportunities have historically been underrepresented in this field.

American Forests has set out to help change that as part of the mission of its Tree Equity work. Its Career Pathways Initiative does so in part by providing tools to tree-care employment training programs around the country and connecting training program professionals so they can learn from each other. These programs assist job candidates, especially those from underrepresented communities, in preparing to enter and thrive in the tree-care industry.

American Forests' Arboriculture Pre-Employment Curriculum gives these programs a practical resource to guide or supplement pre-employment training. It includes modules on work-readiness skills like financial literacy, conflict resolution and resume writing. It also provides training in basic tree-care capabilities such as tree identification, safety, climbing and pruning. The curriculum is available free online and has already been downloaded by 200 unique training programs, municipalities, private employers, educational institutions and more since its release in October 2022. In December 2022, American

Forests launched the Tree Equity Workforce Network, whose members gather virtually every month to attend content-based webinars and participate in Community Labs for networking, sharing and learning. There are close to 90 official members, though new people drop in regularly, and events average 30-40 participants.

American Forests' Director of Career Pathways Tiffany Mrotek has plans to create sub-groups or specialty programming for the group, and her goal is to rack up 100 members by year-end. But, she says, "The number doesn't matter so much to me as what use people are





#### treelines

getting out of it. The network is for the members, and the activities are driven by the stated needs of event attendees. We've heard from our network members that this is filling a gap and what's been needed. It's been fulfilling to watch this bloom." &

Top: Trainees attend an annual conflict resolution session through Landforce, a workforce development nonprofit based in Pittsburgh. This is a recommended training in American Forests' Arboriculture Pre-Employment Curriculum in which crew members learn how to strenathen relationships between individuals as well as social connections within communities. **Bottom: American Forests, TAZO and Bronx Community College held a Green Jobs** Expo in October 2022 to expose people to the many different career pathways in urban forestry. Attendees built new connections with employers and peers, and learned more about the industry and opportunities to join pre-employment training programs following the event.

#### treelines





bove: Workers load up seedlings for an early spring 2022 planting at the Lincoln Boyhood National Memorial n Lincoln City, Ind.

Left: White mesh baskets protect Joung seedlings from deer and othe imals in the forest surrounding the Lincoln Boyhood National Memorial. **Right: Craig Young, regional** piologist with the National Park Service, plants a young oak at the Lincoln Boyhood National Memorial in March 2022. On this day, the Park Service and conservation corps members planted 1,900 trees So far, they have planted 6,200 trees total to restore the forest to its state in 1816.

#### HISTORY

#### **Recovering young Abe's forest**

"WE REACHED our new home about the time the State came into the union. It was a wild region, with many bears and other wild animals in the woods. There I grew up." - President Abraham Lincoln

On the edge of the nation's frontier, the untamed southern Indiana woods helped shape a young Abraham Lincoln. And more than 200 years later, his legacy and a desire to restore the land around his boyhood home are shaping those same woods now.

When Lincoln's family moved to Little Pigeon Creek in 1816, the forest was thick with towering oaks and hickories, and teeming with black bears, white-tailed

deer and wild turkey. Lincoln's family and other early settlers cleared much of the land for farming. By the late 20th century, maple and tulip trees that the Civilian Conservation Corps planted in the 1930s were widespread on the site.

In the 1980s the National Park Service, which operates Lincoln Boyhood National Memorial, set out to bring 12 acres of the forest back to the state it was in when the 16th president grew

up splitting logs and reading books. That comprehensive project has thrived more recently with an infusion of support from Bulleit Whiskey, the muscle of a young adult conservation corps and assistance from American Forests.

Oaks are considered hardy and relatively climate-resilient but need lots of light to thrive. The understory, packed with maple trees, didn't allow young oaks to mature. In 2017, the Park Service began clearing the understory of trees and plants that otherwise would impede the growth of new hickory and oak trees. Since then the Park Service and partners have planted 6,200 trees, including 2,000 white oaks, in the 12-acre area immediately adjacent to the Pioneer Cemetery, where Lincoln's mother Nancy Hanks Lincoln is buried.



#### "The only thing that we have on these 200 acres that is contemporary to the Lincolns' experience here is the forest. By restoring and maintaining that forest, park visitors can step back in time to the environment of Lincoln's youth."

- RHONDA SCHIER, SUPERINTENDENT, LINCOLN BOYHOOD NATIONAL MEMORIAL

"The only thing that we have on these 200 acres that is contemporary to the Lincolns' experience here is the forest. By restoring and maintaining that forest park visitors can step back in time to the environment of Lincoln's youth," says Rhonda Schier, superintendent of Lincoln Boyhood National Memorial.

Giving the new seedlings the best chance to thrive is a labor of love - and fire. To reach the overstory and the sun, the young trees will need to out-compete surrounding plants that threaten to

crowd them out. The National Park Service and the corps have given the fledgling seedlings a leg up by clearing vines and small plants within a few feet of each young tree.

Done by hand, it's intensive maintenance. But "scientifically it gives them a major growth burst," says Austin Rempel, director of forest restoration at American Forests. Support from Bulleit paid for tree planting and cycles of maintenance.

Ideally, the Park Service and its partners use fire — a process that once



naturally thinned the forest - to help maintain it, says Jordan C. Bell, project manager with the Park Service. Earlier this year, the agency successfully used fire in an area where some of the first trees had been planted.

White mesh tubes or "baskets" help protect the youngest seedlings from another threat - the four-legged kind.

"In 2023," Schier says, "we're still looking for ways to keep the critters from eating our crops whether its corn on the farm or oaks in the forest." \*



#### PARTNER PROFILE

#### **ZYRTEC**<sup>®</sup> partners with American Forests to extend relief beyond the allergy brand's products

TREES ARE ESSENTIAL to human health. They filter the air we breathe and the water we drink. They cool our communities by decreasing surface temperatures and providing life-saving shade. But ask any allergy sufferer how they feel about trees and pollen, and you may be met with some skepti-AYRTEC cism about planting more.

Enter ZYRTEC®, a trusted allergy brand that knows all about the potential perils of pollen. ZYRTEC® and American Forests have a common mission: healthier and happier people and planet. In support of this, ZYRTEC® is committed to creating initiatives that help maintain and establish life-saving infrastructures, like trees.

Jenn Lovell, head of U.S. Allergy, who leads the adult and children's ZYRTEC® and Benadryl® businesses, says the brand maintains that all people should have access to the benefits of such initiatives and infrastructures. "An ideal

> future to us is people from all backgrounds having equitable access to resources that help provide a healthier planet and

healthier lives. Climate change continues to impact our planet and allergy sufferers as well - we want to do our part."

Research reveals that higher temperatures and fewer frost days are resulting in a more intense and extended allergy season, up to 20 days longer than decades ago. A natural way to help curb rising temperatures is by planting trees.

"ZYRTEC" identified an important need to extend relief beyond our products and bring relief to communities and the planet," says Lovell.

ZYRTEC<sup>®</sup> first partnered with American Forests in 2022 to support Tree Equity in three key cities: Phoenix, Detroit and Washington, D.C. Recognizing the correlation among trees, allergies and the wellbeing of communities, ZYRTEC<sup>®</sup> made a commitment to invest in trees in the areas that need them most. Through the creation of the ZYRTEC® ReLEAF Project, the brand formalized a multi-year commitment to fund American Forests' research and help advance Tree Equity. In 2023, the project is focused on Detroit.

In Detroit, dubbed the epicenter of childhood asthma in Michigan, arborists and crews who plant trees must take special consideration to mitigate the potential impacts of tree pollen on those prone to respiratory distress.

How do we push forward in our work to plant more trees without

"We are hopeful that by sharing more information on the need and impact of American Forests' Tree Equity work, we can educate individuals and potentially get more organizations involved."

- JENN LOVELL, HEAD OF U.S. ALLERGY, ZYRTEC®

causing additional stress to vulnerable populations? The answer is a reliance on research, community engagement and strategic partnerships.

"At American Forests, we lead with data and science," explains Jenni Shockling, senior manager of urban forestry in Detroit. "We use resources like the Ogren Plant Allergy Scale (OPALS<sup>™</sup>) to help inform species selections."

For example, OPALS<sup>™</sup> indicates that mulberry trees produce a lot of pollen that trigger seasonal allergies, while maple trees are classified as

better for allergy-sufferers. With some species, research indicates that selecting a female is the most allergy-friendly option.

In addition to relying on research, American Forests listens to the communities in which it plants. When residents express concern about tree pollen and allergies, urban foresters and planting partners will either select more allergy-friendly species or will not plant trees directly in front of their homes. American Forests also provides education on what times of year trees produce



American Forests President and CEO Jad Daley stands with social media influencer Ayana Bailey and her son at a ZYRTEC®-sponsored planting in Washington, D.C. By engaging influencers and celebrities, ZYRTEC° hopes to elevate the issue of Tree Equity and get others involved.

#### treelines

pollen and how to use resources, like the ZYRTEC® AllergyCast App, to identify high-pollen days. Armed with this information, residents can take preventive actions like shutting windows to reduce pollen exposure.

So far, the support from ZYRTEC® has enabled the planting of 166 trees. In the next 20 years, it is estimated that those trees will capture and store 250,474 pounds of carbon and cool surrounding air by up to 9 degrees Fahrenheit. What's more, by engaging influencers and celebrities, ZYRTEC® hopes to elevate the issue of Tree Equity and get others involved.

"The issue of Tree Equity is not necessarily widely known," says Lovell. "We are hopeful that by sharing more information on the need and impact of American Forests' Tree Equity work, we can educate individuals and potentially get more organizations involved." \*

#### treelines

#### We speak for the seeds

WASHINGTON OUTLOOK

**EVERY FIVE YEARS, Congress** reviews the farm bill to take stock of how to better support the foresters, farmers and ranchers who supply the food, fuel and fiber that keep us safe.

American Forests has been involved with the farm bill process since the very first in 1933, consistently working to ensure forest investments are integrated into the comprehensive legislation, which also contains titles that fund nutrition, crop insurance, commodities, rural development and conservation programs, among others. Most recently, American Forests supported and spoke up for the strong wildfire risk reduction and recovery provisions in the 2018 Farm Bill, which will remain in effect until the 2023 Farm Bill is passed, likely in early 2024.

As Congress negotiates the new farm bill, American Forests' policy team has been working with lawmakers and their staff to expand policies that invest in the building block of forests: seeds. Not only does this mean advocating for more resources for our nation's nurseries and those who staff them, but also for those collecting seeds and cones to provide raw material for seed production.

In March, Patrick Holmes, American Forests' senior policy advisor for resilient forests, outlined the organization's priorities for the bill before the House Committee on Agriculture:

- 1. Authorize and increase funding for the Reforestation, Nursery, and Genetics Resources Program.
- 2. Establish a new competitive grant program for reforestation research, nursery, seed collection/storage and workforce needs.
- 3. Create nimble loan and loan guarantee financing for nurseries serving public, private and urban reforestation and recovery needs.





Top: A U.S. Forest Service staffer points out the root structure of a seedling grown at the agency's Coeur d'Alene nursery in Idaho. The nursery is one of only eight federal Forest Service nurseries in the country.

Bottom: Forest Service Horticulturist Lee Riley pulls seeds from the massive freezer at the Dorena Genetic Resource Center in Oregon. American Forests is proposing a new competitive grant program that would fund reforestation research projects included in the 2023 Farm Bill.

Scaling up capacity for our nurseries must be done urgently to support the pace of climate-adapted reforestation needed on our landscapes. As Holmes told Congress, "Unleashing

partnerships right now, at a time where capacity is one of the greatest limiting factors in accomplishing our work, will be critical to everyone's collective success." 🔹

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# Let's pass the TREES Act.

#### Tree cover improves air quality, combats heat islands, buffers flooding and creates healthier communities.

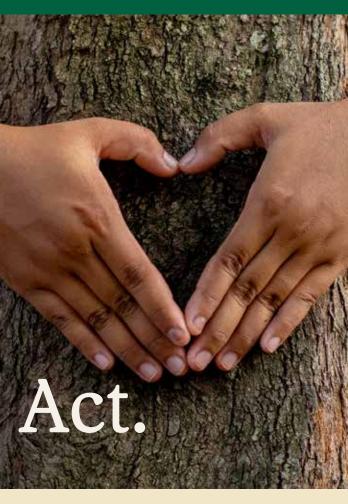
The TREES Act would plant at least 300,000 trees each year in neighborhoods that need them most.

#### **Thousands have joined the REI Cooperative Action Network** to urge Congress to pass the TREES Act. Join us.



Add your voice at REI.com/trees or scan the QR code.





# **Gignitics K** fixing California's reforestation pipeline

How restoration in the Southern Sierra is serving as a model for the American West

BY LIANE O'NEILL

A giant sequoia towers over the surrounding forest at Mountain Home Demonstration **State Forest in the Souther** Sierra. Giant seauoias in Mountain Home can reach 240 feet tall and 27 feet in diameter. Many are more than 2,000 years old. In 2020, the Castle Fire damaged hundreds of old-growth giant sequoias in Mountain Home. **American Forests helped plant** approximately 212,000 trees in Mountain Home in 2022.





Above: Members of the California Conservation Corps' Forestry Corps measure out plot sites, within which they identify and document different conifer species naturally regenerating following wildfire. The data will be used to determine future restoration activities needed for the site.

Left: Members of the Forestry Corps split up to observe and document seedlings naturally regenerating at random plot points spread throughout 500 acres of forest burned by the Castle Fire.

IT'S A DENSE, FOGGY AFTERNOON in the Sequoia National Forest. New vegetation carpets the soil, a vivid contrast against multitudes of scorched trees that stand watch. A boot pads the ground, followed by another and another, altogether 13 pairs that traipse through the landscape. Their owners emerge through the mist, marked by fluorescent green vests and multi-colored hard hats. Soon the people attached to the boots will break off into pairs to perform a precise dance.

> It begins with Noé Romo Loera, who holds a tape measure in their hands. "Eleven feet, 9 inches," they announce. Romo Loera begins taking careful steps forward, threading the tape measure between their fingers as they

walk toward fellow Cone Corps member, Caitlin Edelmuth, who holds the other end of the yellow tape. Romo Loera's eyes scan the ground, picking out young seedlings from the surrounding foliage.

Over 2.4 million acres have burned across the southern Sierra Nevada since 2000 due to wildfire.

CAN JOSE

SAN FRANCISCO

FIRE PERIMETERS

36,619 ACRES 2 DAYS

DETWILER FIRM

96.831 ACRES

139 DAYS

CASTLE FIRE

170,648 ACRES

138 DAYS

81.826 ACRES

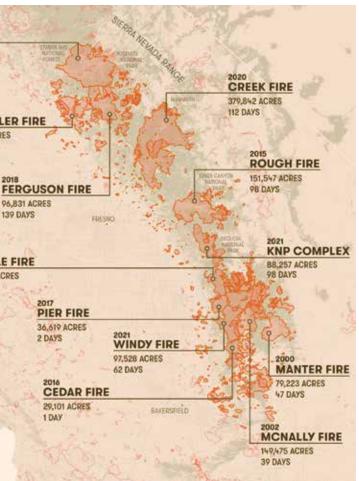
47 DAVS

CEDAR FIRE 29,101 ACRES 1 DAY

A GIANT TASK: FIXING CALIFORNIA'S REFORESTATION PIPELINE

"This is incense cedar. One two, three, four..." they note as they count the seedlings, concluding there are more than 15 present before moving on to identify small Douglas-fir shoots popping through the forest floor. Romo Loera instructs the other field staff who stand by to record the numbers on tablets they hold. Then Romo Loera backs up, releasing the tape to its original starting length. They will repeat this process again and again until they have traced the

The technicians are surveying for signs the forest is naturally recovering after the Castle Fire barreled through more than 170,000 acres in 2020. Their tests take place at randomized plot points spread throughout 500 acres of charred forest. Up the road, the burnt pines and firs are flanked by towering, blackened husks - the remains of giant sequoias, also hit by the Castle Fire. Found naturally only on the western slope of the Sierra Nevada mountains, the sequoia has long captured the nation's fascination. At the









Top: Snowcapped mountains and green forests surrounding Mountain Home give way to the remnants of the Castle Fire. Bottom: Trees burned by the Castle Fire, which blazed through more than 170,000 acres in 2020, stand on an altered landscape, where vegetation is slowly returning. turn of the 19th century, one was cut into pieces to be shipped to and reassembled at the 1893 Chicago World's Fair.

Today, remnants of that mighty sequoia's brethren stand among dead conifers extending as far as the eye can see. It wasn't meant to be like this.

#### UNPRECEDENTED NEED IN THE GOLDEN STATE

In recent years, numerous megafires have patchworked their way across the Southern Sierra, leaving behind miles of destitute forest. Lowseverity wildfires can help rejuvenate forests, clearing excess brush and debris, and even enabling the cones of serotinous trees, like the giant sequoia, to open and release their seeds. However, the high-severity wildfires of recent years have caused high mortality rates for forests here and across California.

"Wildfires have existed and benefited this landscape for many thousands of years," says Kat Barton, Southern California reforestation manager with American Forests. "But the fires that we've been seeing in the last five to 10 years are outside of the natural range of variation. We're concerned because fires are increasing in intensity and size, and in those scars we are unlikely to see trees naturally regenerating."

California's forests provide invaluable ecological and social benefits that extend far beyond the state. They serve as wildlife habitat, provide countless recreation opportunities, and are a source of tourism and timber that supports community economies. And then there is water. These forests hold, slowly regulate and filter snowmelt, sending clean water to downstream communities, including those in the Central Valley, which grows 25% of the nation's food.

Wildfires are among a slew of threats that have been jeopardizing this vital relationship.

"The fires, drought and bark beetles that have occurred in California in recent history are causing an unprecedented number of trees to die," Barton says.

The impact on giant sequoias has been particularly significant. It's estimated the Castle Fire alone killed 10% to 14% of the world's giant sequoia population.

What's more, large high-severity wildfires are burning up the cones and seed supply that enable forests to naturally regenerate, creating a need for human-assisted replanting.

"We're seeing a lot of land that needs reforestation," says Jimi Scheid, reforestation services program manager with the California Department of Forestry and Fire Protection, also known as CAL FIRE. "That cannot be accomplished alone by natural regeneration from those parent trees."

Approximately 1.5 million burned acres across California need to be reforested. But, like much of the western U.S., there have been multiple barriers to restoration. There are conifer seed shortages, a shrinking workforce of foresters and technicians, and limited nursery space to grow seedlings. These factors and more are creating bottlenecks across the reforestation pipeline the chain of activities and materials that trace all points of the replanting process.

The impediments have cascading effects, slowing foresters' abilities to make significant inroads at a time when more and more acres seem to burn every summer.

"We're really worried about areas that were historically forested converting into shrubdominated landscapes," Barton says. "We're trying to prevent a scenario where we are losing many of the forested ecosystems in the state to shrub lands."

#### **BREAKING DOWN BARRIERS**

The path to fix the reforestation pipeline is a complex one. It involves expanding workforce capacity, growing nurseries, and encouraging collaboration and shared resources across Above: Kat Barton, American Forests' Southern California reforestation manager, looks across a restoration site in the Sequoia National Forest. The site was recently prepped and planted with a mix of conifers, including giant sequoias.

#### "Cone Camp is now something that is probably taking the place of what used to be institutional knowledge by land managers and foresters and people that work these lands and indigenous folks."

- JIMI SCHEID, REFORESTATION SERVICES PROGRAM MANAGER, CAL FIRE

different landowners and political jurisdictions. Plus finding the funding to cover it all.

In 2022, the U.S. Forest Service Pacific Southwest Region and CAL FIRE created the Reforestation Pipeline Partnership, a strategic collaboration designed to address reforestation. Catalyzed by Governor Gavin Newsom's California Wildfire and Forest Resilience Task Force and a 2021 national study on reforestation capacity needs, the partnership is opening up lines of communication to identify and address how the restoration process can be improved.

Among the programs created by the partnership are a cooperative that brings practitioners together on a regular basis to share the latest reforestation research, strategize and exchange information.

Through the Reforestation Pipeline Partnership, public and private land managers across the state now have the ability to do something rather extraordinary – to share information and data across invisible lines of ownership. And that's just the start of it.

"The Reforestation Pipeline Partnership is a first of its kind," says Britta Dyer, vice president of forest restoration with American Forests. "It doesn't just encourage us to go across agencies

or boundaries, but really invites, welcomes and supports vital restoration conversations that have on-the-ground results."

American Forests acts as an organizer and conduit of information. A partner that is one step removed from land managers, the organization has a vantage point that often helps to identify deficiencies in the process and find solutions.

For example, during the fall of 2022, American Forests became aware of a tree-climbing contractor harvesting cones in Sequoia and Kings Canyon National Park. Meanwhile, a mere 15-minute drive away, cones were also ripening and ready in the Sequoia National Forest. By working across landowners, American Forests was able to work with the climbing contractor and retrieve cones that otherwise would not have been collected.

"We are able to step in, and because we work across boundaries, we can facilitate a space where we are having those conversations while simultaneously learning from land managers," Barton says.

#### **REBUILDING A DIMINISHED SEED SUPPLY**

Seed, the smallest but most fundamental component of the replanting process, is often a starting point for many conversations.

For decades, seeds have been collected and stored in bags, boxes and barrels at public and private facilities, where they are suspended in development by large industrial refrigerators.

Prior to this new era of wildfires, forest managers would dip into the supply from time to time, but the need was not great, and so these seed stores were maintained. Collection would slow at times, especially when budgets were tight.

"We didn't really see the need to be making so much of a concerted effort to be focusing on trees and reforestation and cones and seedlings," says Stewart McMorrow, staff chief for wildfire resilience programs for CAL FIRE. "And then this series of destructive wildfires started happening, and people started looking up and going, 'Oh man, we don't really have the seeds to get in front of this issue."





Top: Whole and cut giant sequoia cones lay out on a table. Giant sequoia cones are serotinous - unlike many conifers, the cones can remain green and tightly closed for decades until fire causes them to dry out and open their seeds, propagating a new generation of trees. Bottom left: A cone camp participant examines a sliced giant sequoia cone to inspect for the effects of insects or disease and count the number of healthu seeds

Bottom right: A cone cutter is used to slice through a giant sequoia cone. Forestry technicians use cone cutters to examine seed development and look for the impacts of disease and insects, factors that determine whether a crop may be viable for later collection.

Today, adequate seed supply is paramount to restoration efforts.

"We have a great need to collect viable seed to ensure we maintain the genetic diversity of California's forests and grow the millions of seedlings needed to recover conifer forests," says Shelley Villalobos, manager of the California Reforestation Pipeline with American Forests.

Seeds can be sourced from two places: seed orchards (rows of trees maintained on farmland for the purpose of producing cone crops) or the wild. While seed orchards offer easy access and greater control over variables that might impact

coordinated process.



Below: Britta Dyer,

vice president of

restoration with

**Bell**, Placerville

Service, during

Cone Camp.

nurseru manaaer

with the U.S. Forest

American Forests. speaks with Wade



cone productivity, there are just three publicly managed orchards in California charged with supplying 18 national forests. So, much of the responsibility for ensur-

ing there is enough seed to meet the need for replanting falls on wild seed collection. And that involves a remarkable, highly

Every August, trained technicians survey forestlands under the oversight of project managers. They seek out trees laden with cone crops, sampling the cones to test viability and monitoring candidates until they reach maturity.

A GIANT TASK: FIXING CALIFORNIA'S REFORESTATION PIPELINE



Top: Jimi Scheid,

reforestation services program

manager with

the California

Department of

cone collection

Bottom: Daniel Keeleu, a consul-

tant with SEGI

discusses cone collection stra-

teaies with a aroup

of foresters during

Cone Camp at

**Mountain Home** 

Consultina.

Forestry and Fire Protection, speaks

with foresters about

during Cone Camp.

For most conifers, peak ripeness occurs in a two-week window every one to two years, during which collectors rapidly deploy, hiking out into forests and sending trained climbers high into trees. The cone collectors work their way through varied and sometimes steep mountain terrain, carrying upwards of 60 pounds on their backs.

Since the annual collection window is narrow, the success of a harvest can hinge on technician training and internal communication. One missed day can cost bushels of lost cones.

With the goal of cultivating a larger pool of cone collection experts, the Reforestation Pipeline Partnership organized three inaugural Cone Camp trainings across California this past summer, the first of which took place in Mountain Home Demonstration State Forest, adjacent to Sequoia National Forest.

The two-day programs brought together a mix of seasoned and early-career foresters. Following a day of formal education in a classroom setting, more than 150 foresters learned from experts



about cone surveying and collection management, watched tree climbing demonstrations and sliced through cones to scrutinize seed health.

According to Scheid, Cone Camps are not only helping to prepare foresters for successful future harvests, but they are also ensuring best practices are not lost.

"Cone Camp is now something that is probably taking the place of what used to be institutional knowledge by land managers and foresters and people that work these lands and indigenous folks," Scheid says.

#### NURTURING THE NEXT GENERATION OF FORESTERS

Cone Camp is just one of many concerted efforts happening across California to recruit and train the next generation of foresters and forestry technicians.

The need for a skilled workforce extends far beyond just cone collection to all points of the reforestation pipeline. Today, there are not enough skilled experts available in the state to tackle the growing number of burned acres.

The California Cone Corps, a workforce development program created by the Reforestation Pipeline Partnership, is one initiative seeking to build immediate capacity and prepare corps members to step into open positions.

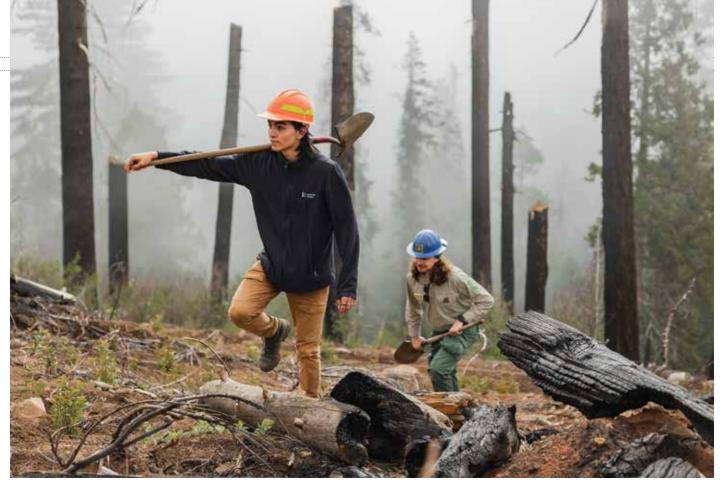
Cone Corps members are assigned to specific stations in the state, where they receive training on various aspects of the supply chain.

Currently, there are nine Cone Corps members, including Romo Loera and Edelmuth. Some are bolstering capacity at California's two publicly owned tree nurseries. Others have been sent to support seed orchards. The rest are managing post-wildfire restoration up and down the state. Hiring for Cone Corps members continues, with the ranks expected to increase to 19 by early fall.

Cone Corps is not only filling an immediate need, but it's also creating a pool of future skilled technicians to help satisfy the state's restoration priorities.

"I've gotten to experience a lot of the developmental side of what this type of work entails, like contract management and identifying trees and cone crops," Romo Loera says. "All of that kind of detail-oriented work that I didn't have prior to coming into this position has been really useful."

In turn, Romo Loera and Edelmuth have been able to turn around and instruct other up-andcoming forestry technicians, like members of the California Conservation Corps' Forestry Corps program who have assisted them with natural regeneration surveys in Sequoia National Forest.





Above: Noé Romo Loera, Cone Corps member, walks through a restoration site with Joshua Miller of the U.S. Forest Service. They plant giant sequoia seedlings and remove surrounding vegetation that could out-compete the fledgling shoots. Left: Caitlin Edelmuth, Cone Corps member with American Forests. measures and records the growth data of recentlu planted seedlings using a staked row survey. The stakes will enable foresters to monitor how the plants grow over a five-year period.

A GIANT TASK: FIXING CALIFORNIA'S REFORESTATION PIPELINE

The California Conservation Corps' Forestry Corps works with young people ages 18–25, many of whom come from underserved and underrepresented communities. Like the Cone Corps, it trains future foresters, oftentimes with hands-on experience, with the goal of placing them in environmentally focused careers where they can make an immediate impact. The program also provides career pathways mentorship, helping its members reach critical milestones - everything from earning their high school diplomas to receiving industry certifications.

There are nine California Conservation Corps Forestry Corps crews across California with 135 members total.

"The work we're doing, this is the heart and soul of what the California Conservation Corps does," says Bruce Saito, director of the California Conservation Corps. "For me, it's trying to provide many opportunities for folks - not just training, but opportunities that light the candle, the imagination."

#### A TEMPLATE FOR THE FUTURE OF FORESTRY

Amid blackened trunks and the residual red powder of retardant, among the slender green shoots

of seedlings and soft piles of recently turned soil, there is progress happening in the Southern Sierra and greater California.

Six different wildfire scars are receiving restoration treatments. Newly trained technicians are scaling up in numbers. And information is flowing between federal, state, tribal and private landowners.

Experts are measuring the progress of natural regeneration. Others are collaborating on future site preparations and planting. And this past August, scores of technicians hiked through the woods to retrieve bushels of cones.

Trees are being returned to the land. Since 2021, more than 297,000 trees have been planted across more than 1,430 acres in Sequoia National Forest through the support of American Forests, Save the Redwoods League and numerous other partners. In 2022, American Forests helped plant approximately 212,000 mixed conifers in sections of the Mountain Home Demonstration State Forest that had been damaged by the Castle Fire. And so far in 2023, American Forests has led the planting of more than 286,000 trees, including about 14,000 giant sequoias, across three different wildfire scars.



The Amos Alonzo Stagg Tree, the world's fifth-largest giant sequoia tree, extends into the sky. The tree, which is thought to be older than the Roman Empire, upwards of 3,000 years old, is inset with burn scars from historical fires that have left marks in its thick bark.



"This is the moment in time. Our ability to collectively adapt and flex our solutions to the scale of the problems is going to be what makes us or breaks us, and the only way we can do that is together."

- BRITTA DYER, VICE PRESIDENT OF FOREST RESTORATION, AMERICAN FORESTS

"It gives me so much hope to see and be able to assist all of the implementation that's happening on the ground right now," Edelmuth says.

In California, a state that has often led the way on environmental policies and solutions, a new template is being written for the future of forests in the western U.S.

"California is really serving as a petri dish right now," Dyer says. "We are trying out all sorts of things, seeing what's working and how we can improve it."

And what's working is being translated into methods that can be taken to other forests, regions and states to help support their unique challenges. While the environment and the extent

of fire damage may differ and the landowners may change, California is not alone in seeking solutions to conserve and restore healthy forests. "This is the moment in time," Dyer says. "Our ability to collectively adapt and flex our solutions to the scale of the problems is going to be what makes us or breaks us, and the only way we can do that is together." 🔶

resilient forests.

Funding for this project provided by the California Department of Forestry and Fire Protection's Forest Health Program as part of the California Climate Investments Program

Above: A giant seauoia seedling grows among a pile of scorched seguoia cones. This particular seedling naturally regenerated re-establishing without human assistance.

Liane O'Neill writes from Portland, Ore. and serves as American Forests' senior brand manager for





BY LEE POSTON





"We're looking at the Tree Equity project for the United Kingdom, and I think people get it that trees are good," Nuttgens says to the nodding approval of the group. "I think there's a real appetite for it here."

Lorraine Dixon, who owns an art supplies store on the same street, emphasizes the relative lack of trees along Chesterfield Road. "We went to Endcliffe Park, and I just touched a tree and said, 'look at the size of this and how beautiful it is," she says with a laugh. "And just that moment was amazing. Can we have a bit of that here?"

Sheffield is full of trees and parks, but they are not equally distributed throughout the city due to historical, societal and economic reasons. On busy streets like Chesterfield Road, it's mostly because of traffic regulations and infrastructure, such as gas and electric lines, that crowd the narrow sidewalks. In other parts of the city, it's due to historic barriers such as economics, employment and even community resistance. This is why Nuttgens is leading the Woodland Trust's collaboration with American Forests and the U.K.'s Centre for Sustainable Healthcare to bring American Forests' Tree Equity Score to England, Scotland, Wales and Northern Ireland.

#### LAYING THE FOUNDATION

The first goal of the collaboration is to create a Tree Equity Score for the U.K. that will be plugged into an application similar to American Forests' Tree Equity National Explorer. This will allow users to see detailed information about the scores for any city or town in the U.K., which will help them plan where to put new trees and how to manage existing trees.

The work "will help illustrate where the resources for trees really need to be," says Nuttgens. "Not just for planting, but also for better management of trees, for more community involvement in trees, and more resources and funds to help boost involvement with trees in those cities and towns."

The U.K.'s Tree Equity Score will employ a new methodology and equation, which will differ from the one that has been so successful in the





Pages 28 and 29: Sheffield is of industry with an equally p runs through – and under – Left: Mandala Café, second Chesterfield Road, a busy an civically active community. Top right: Lorraine Dixon, ow Adam Cormack, head of car neighbors about whether m calming effect on aggressiv Bottom right: Cormack (fore Equity with the owner and po Adam Heyes, local resident J





Pages 28 and 29: Sheffield is a city of contrasts, blending a proud history of industry with an equally proud reputation for tree cover. The River Sheaf runs through – and under – Sheffield, giving the city its name.

Left: Mandala Café, second from left, is one of several businesses on Chesterfield Road, a busy area in Sheffield with limited tree cover but a civically active community.

Top right: Lorraine Dixon, owner of Art Scene on Chesterfield Road (L) and Adam Cormack, head of campaigning at the Woodland Trust, talk with neighbors about whether more trees along Chesterfield Road will have a calming effect on aggressive drivers.

Bottom right: Cormack (foreground) discusses the potential of Tree Equity with the owner and patrons of Mandala Café — (from L to R) owner Adam Heyes, local resident Jennifer Foster, Catherine Nuttgens with the Woodland Trust and Dixon.



"We need good ways to value urban trees because space is at a premium in the U.K. It's a relatively small island, but lots of people are living here. So, you need good systems for valuing trees in order to make sure we maintain the space for them and the resources to look after them. And, Tree Equity does that."

- ADAM CORMACK, HEAD OF CAMPAIGNING, THE WOODLAND TRUST

**Below: Miriam** Dobson leads on trees and woodlands at the Centre for Sustainable Healthcare, which is partnered with **American Forests and** the Woodland Trust to bring Tree Equity to the U.K. "Trees have a really positive impact not just on people's mental health and wellbein but also on physical health," she says.

United States. The difference is due to discrepancies in datasets between the U.S. and U.K., as well as differences in the context of the equity challenge in the U.K. The U.K. score will measure a variety of factors within a neighborhood, such as existing tree canopy, income, age, employment, surface temperature and health. This information will primarily come from census data.

It's worth suspending those Downton Abbey images of manors set amid vast, rolling countryside. Instead, note that the U.K. has a much higher population density than the U.S. It is the 52nd most densely populated country in the world, while the U.S. is 178th. Cities and towns are much closer together, have developed over hundreds of years, and have seen a largely agrarian society morph into industrial and postindustrial economies. This was especially true in Sheffield, which went from a city of villages in the 1700s to an industrial powerhouse over the next 200 years. It also explains why trees are so prevalent here, as former hunting estates were handed over to the city to serve as an escape from the grind of city life, Nuttgens says.

Densely populated small streets, laid out over a thousand years or more, with no U.S.-style grid layouts and large civic spaces are a big challenge, says Adam Cormack, head of campaigning for the Woodland Trust. "That's where we're hoping the idea of Tree Equity will help, really. It's a new, much stronger case for investing the





resources necessary to get trees everywhere they're needed."

Cormack adds that in the U.K. while the average urban tree canopy cover is around 17%, in some places it is as low as 5%, well below the government's recommended minimum target of 20%.

Mushtaaq Ali, senior manager of GIS and data science at American Forests, is analyzing and implementing the data and mapping tool for the project. She says the baseline for tree canopy will be lower in the U.K. targets than the U.S. ones due to the differing datasets and ecological conditions between the two countries.

The U.K. Tree Equity Score will lean heavily on England's Index of Multiple Deprivation, which ranks all small areas throughout the country from least deprived to most deprived. The seven indices are income, employment, education, health, crime, barriers to housing and services, and living environment.

Miriam Dobson, who leads on trees and woodlands for the Centre for Sustainable Healthcare, explains why her organization is a partner in the project: "We know that trees have a huge positive impact on people's health and wellbeing. But also, the areas with the lowest health outcomes and greatest risks of health deprivation are the areas that also experienced the least Tree Equity and the lowest tree canopy cover."

#### **CONFLICT LEADS TO COOPERATION**

Back at Mandala, owner Adam Heyes is switching between making coffee and weighing in on the discussion. Bearded, beaded and charismatic, he moved here in 2003 and was amazed at the diversity and the tree cover. Heyes often chats with locals and his café patrons about the myriad benefits trees could provide if more were planted in the areas currently lacking canopy.

"I've had conversations about people's mental health and the positive impacts having more trees around here, especially on the roads, could have for me not just as a café owner...but also for the benefit of everyone passing by," he says." You can never have too many trees!"

Sheffield residents have been pushing for more trees along busy streetscapes and also to preserve the trees already there. It's been an ongoing issue for the city, one that came to a head in protests between 2014 and 2018, which pitted the City Council and some business owners against a determined group of activists and residents. At issue were plans by the City Council to fell thousands of healthy trees for street improvements, such as highway upgrades, Above: Heyes behind the counter of Mandala Café. "I do think trees are massively vital and integral in the role that they play to make people feel better and to just make everything nicer," he says. "Because the world at the moment isn't always that nice."



pavement replacement and renewal of streetlights. The protests culminated with the 2021 Sheffield Street Tree Partnership Strategy agreed to by the City Council, environmental groups such as the Woodland Trust, campaigners and residents.

Nuttgens believes these "Tree Wars" ultimately helped usher in an era of a more cooperative approach to tree conservation, and Tree Equity is one way to help deliver it.

Sheffield has a proud history as the steel manufacturing hub of the U.K. — the Pittsburgh across the Pond, some might say. The impact of the decline of that industry in the 1970s and '80s on Sheffielders was famously captured in the 1997 global hit movie "The Full Monty."

However, Nuttgens notes that Sheffield has an equally proud reputation as the U.K.'s "City of Trees," with more trees per capita than any other city in Europe. And while those trees are spread out across the city — including the hilltop community of Gleadless Valley, where massive, multi-story public housing buildings look out over dense, deep green forests and the city beyond — there are still notable gaps in tree cover, especially along thoroughfares.

"That's one of my favorite things about [Sheffield] — the trees," Heyes says. "What is a shame is when you see the big, long roads, and they are the main ways in out of places, and they just don't have that."

#### LISTENING TO THE CHILDREN

Half a mile up the street from Mandala is Lowfield Primary School, sandwiched between two very busy roads. Built in the 1870s, it has 400 students who speak more than 40 languages and hail from around the world. A number of the pupils are refugees, including some fleeing the war in Ukraine.

It's also one of the most polluted schools in the city.

As Nuttgens prods the students with questions, they politely and energetically tell her how much trees mean to them. She asks what they hear when they are outside in the playground. "Cars!" they answer almost in unison. She asks them to close



road improvement projects.







Left: Meersbrook Park Road was a flashpoint in the "Tree Wars" that erupted when Sheffield decided to fell thousands of mature trees for

Top right: Nuttgens talks with pupils from Lowfield Primary School about how trees act as natural barriers against road noise and pollution. Bottom right: Lowfield sits at a fork between two busy roads and was recently named one of the most polluted schools in the city. Its pupils say more trees would help keep noise at bay and make the air cleaner.









Top: Pupils tend to their planting project in the Lowfield playground.

Left: Tree planting and gardening are priorities for students at Arbourthorne Community Primary School, which is blessed with abundant open space. The school works with the Woodland Trust and Sheffield City Council to increase tree cover on campus.

Lower right: Arbourthorne teacher Angela Hiley says they work hard to provide opportunities for students from all backgrounds to thrive, including a Tree Champions group. "Our school is definitely a haven for children and families who often have multiple challenges in their lives."



their eyes and imagine how they would feel if their playground had more trees in it. "Calm, peaceful, relaxed and quiet," they say, along with "you feel like you're in a better environment."

Lowfield is working with the Green Fences Project, which helps schools develop green barriers by planting more trees between the students and the road. "It's not going to solve the whole problem, but it's different ways of trying to organically tackle it," says Jo Quinlen, safeguarding liaison officer for Lowfield.

Arbourthorne Community Primary School doesn't have the same pollution and traffic issues that Lowfield experiences. Located on a scenic hilltop southeast of the city center, it does, however, have one of the country's lowest measures in terms of the multiple deprivation index. In a neighborhood that has lost many of its trees, the school is somewhat of an oasis, with a huge playing field surrounded by trees and plants that would be the envy of any school.

Visitors are greeted outside by an impressive metallic wall sculpture of a flowing tree and inside

by a lively educational display about trees and their seeds. Eleven-year-old Gedeon points to the lack of trees in his neighborhood versus here at school. "I'm hoping to see more trees because I don't see a lot of trees that much anymore in my area," he says. Nuttgens notes how Gedeon's neighborhood could be a focal area for Tree Equity investment. In the meantime, the students are making the most of what they have by planting trees, plants and vegetables on the school grounds, and learning as much as they can about the importance of trees. Nine-year-old aspiring dentist Hyawqal, clad in a shirt reading "Love Our World" and red hairbow festooned with hearts, eloquently summarizes what the project means to her: "Imagine living without any trees and no, like, green atmospheres around you. You'd just feel really dull inside because there's no color." Hyawqal recently won a competition by writing a poem about the beauty of trees and how happy

they make people.

Stella Bolam works with Arbourthorne on planting projects. She is the community forestry **Above: Nuttgens** helps students explore the trees surrounding their playground at Arbourthorne, which was judged by OfSted (the U.K.'s school standards setting organization) as being "a place of joy, inclusivity and learning."



**Right: Sheffield's reputation for having some** of the highest tree cover in Europe is not in doubt. The auestion is whether that tree cover is distributed fairly across the city's diverse and growing population. Introducing Tree Equity Score here, and elsewhere in the U.K., is one way to get trees into areas that are often severely lacking. Below: Nuttgens sits in the middle of a recent Sheffield project called "Grey to Green," that has transformed a formerly bland, concrete section of the citu into a sustainable. climate-friendlu urban park full of trees and brilliantly colored flowers. "Seeing projects like this makes me feel really, really positive for the future of trees in the urban environment," she says.





"The mission that we have at American Forests is applicable anywhere, and the goals of Tree Equity are to catalyze more investment in the places that need it the most. We want to democratize data - the information that people who care about these issues need - and to make that information available to them."

- CHRIS DAVID, VICE PRESIDENT OF GIS AND DATA SCIENCE, AMERICAN FORESTS

project development officer for Sheffield City Council, whose role is to plant and establish trees on public land for schools, community groups and others.

One priority of her work is planting in areas of low tree cover, while another is negotiating with community members who don't want trees. Opponents to tree planting have a variety of

motivations, including the fear of trees falling or blocking light, and a belief that what's being planted is the wrong species or in the wrong location.

"I think a lot of people don't feel connected to nature, and I find that really sad because I've recently reconnected with nature a bit later in life," she says. "I get so much out of it."

She works with residents to let them know the multiple health and environmental benefits of trees. She also coordinates plantings with people who have mental health issues. "Afterwards, they feel really good because they feel like they've done something that's meaningful, and they've done it with people around them," she says. "So I think that's all part of what we do. It's not just about trees. It's about helping people."

#### **BEYOND THE U.K.'S SHORES, TREE EQUITY'S** FAR-REACHING INFLUENCE

Chris David, vice president of GIS and data science at American Forests, says the initial indications from the U.K. project are encouraging: "The mission that we have at American Forests is applicable anywhere, and the goals of Tree Equity are to catalyze more investment in the places that need it the most. We want to democratize data - the information that people who care about these issues need - and to make that information available to them."

Successfully doing so in the U.K. buttresses the idea that the Tree Equity model can be adapted in other countries, and that the main challenges are differences in census data and data collection in general.

While his team is not currently working with "We're seeing the staying power of Tree Equity

other international partners on a similar scale, David says they have been approached by numerous countries about expanding. The team is open to the idea and is setting up the technology so that it's possible to do this work in other parts of the world. Score, and how it has been a way to capture the imagination of people, not just around the country, but around the globe," he says. "It's more than a map. It's a tool for action."

Lee Poston is a native of Wolverhampton, U.K., who now lives in University Park, Md., where he writes about conservation issues and advises mission-driven organizations.

#### **Ushering in the** next generation: **Tree Equity Score 2.0**



Since 2021, Tree Equity Score has enabled city officials, community activists and urban foresters to make comprehensive assessments of tree canopy cover in specific neighborhoods aligned with critical factors such as income, race, health and climate. Chris David, vice president of GIS and data science at American Forests, heads the team responsible for creating the tool. This past summer, they made critical updates to the Tree Equity Score tool and expanded its coverage to further impact how we perceive and tackle equitable tree distribution in urban environments.

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#### At a glance: What's new?

- M Expanded coverage to include every urban area in the U.S.
- Ability to compare and prioritize scores ►.
- Þ9 Refined canopy goals
- New, nationwide dataset for urban heat severity
- Improved, high-resolution tree canopy data from Google ►
- New Census data
- Ability to search or drop a pin on any address or location
- Access to dynamic reporting  $\succ$
- New help widget

#### **Q&A with Chris David**

Q: How do you ensure that communities receive resources and support to achieve their Tree Equity goals? A: "We do our best to help level the playing field. That starts with making the powerful information in Tree Equity Score available to any urban area, large or small. This is a critical part of our mission to democratize data nationwide for Tree Equitu."

**Q:** Why is it important to calculate urban tree canopy using a Tree Equity framework?

A: "At American Forests, we believe everyone has the right to the life-sustaining benefits of trees, the right to Tree Equity. But, if you live in a low-income community or a community of color, chances are, your access to those benefits have been limited - one of the many generational legacies of institutional racism including Redlining. With the release of Tree Equity Score 2.0, we've been exploring more deeply the impact these disparities have on people. Neighborhoods with the fewest residents of color have four times more tree cover per person than neighborhoods with the most residents of color. Neighborhoods with the lowest poverty rates have double the tree cover per person compared to neighborhoods with the highest poverty rates. These stats frame the problem and set the framework for a solution. But Tree Equity Score goes a step further, incorporating measures estimating where the urban heat island is most impactful, and where there might be more people at risk, such as seniors, children and people with existing conditions."

Q: How does American Forests support and promote data literacy among individuals and organizations interested in utilizing the tool?

A: "It's important to note that people can't use data if they don't have access to it. Nor can they use it, even if they have access, when they don't have the

tools and support to understand it. Visitors to the Tree Equity Score platform do not need a computer science or statistics degree to engage with the data. It's easy to understand. At its core, Tree Equity Score's success now, and in the future, will be driven by how well we address the needs of all users."

Q: How did you foster a collaborative and innovative environment within your team at American Forests to drive the development of Tree Equitu Score 2.0?

A: "Being a part of a team that shares your values is one of the most rewarding things a person can have in their career. I'm so proud to work with this group. I do my best to foster a culture of teamwork, personal growth and accountability. We support each other, and we celebrate each other authentically. Everyone knows they have an advocate in me, and I know I can count on them when I need them. And we are all committed to the mission of American Forests and of Tree Equity."

#### The faces behind the technology



Mushtaaq Ali, senior manager of GIS & data science



design & UX

Julia Twichell, director of data Geri Rosenberg, senior manager of aeospatial development & analysis

#### At a glance: What's next?

- Continued improvements to the Tree Equity Score National Explorer application
- ► A fully optimized mobile version of the Tree Equity Score website
- A Spanish language version of the Tree Equity Score platform
- New Tree Equity Score Analyzers for six cities
- The Tree Equity Data Dashboard with more ways to analyze data and look across regions, states, cities and more
- The Tree Equity Support Center, a resource to help guide users in putting their Tree Equity Score(s) into action through policy and planning solutions, advocacy, fundraising and more



Neighborhoods with the fewest residents of color have four times more tree cover per person than neighborhoods with the most residents of color. Neighborhoods with the lowest poverty rates have double the tree cover per person compared to neighborhoods with the highest poverty rates.

Chase Dawson. software & data enainee

Refugio Mariscal **GIS** analyst

americanforests.org/TES-2-Interview

AMERICAN FORESTS FALL 2023 41



# The life and times of Benito Trevino

In the Rio Grande Valley, a native Texan reflects on his journey from migrant worker to nuclear weapons handler to renowned ethnobotanist

BY LEE POSTON





BENITO TREVINO IS EXCITEDLY DESCRIBING the wildlife that inhabit his ranch, Rancho Lomitas, deep in the Rio Grande Valley of Texas.

He says he feels "very, very fortunate" to live alongside the indigo snake, a black reptile that can stretch to 8 feet and is notorious for chasing and eating rattlesnakes. By helping control the local rattlesnake population, they serve an important ecological function. And Trevino feels a particular affection for the 3-inch Mexican burrowing toad that spends most of its life underground and emerges after a hard rain for a frantic one-tothree-day mating period.

"They come out of their burrows and start making a 'Wow! Wow!' sound that travels about 2 miles," he says of the toads' mating calls.

Their continued existence on Rancho Lomitas is an indicator of why Trevino's land is unique. Agriculture and urban development are squeezing wildlife into smaller and smaller pockets of land, meaning that species such as these are in trouble across the Rio Grande Valley. The Mexican burrowing toad, for example, is listed as threatened by the Texas Parks and Wildlife Department, but if Trevino has anything to say about it, these and other species will always have a safe haven on his ranch.

Trevino is an ethnobotanist, a native plant nursery owner, a teacher to generations of residents and a local legend. While he loves the

reptiles, birds, butterflies and other species that flourish here, his true passion is the plants.

"It's pretty much been my whole life devotion to our native plants," he says. "To me it's not just preserving it for wildlife, but preserving it for human beings, for us, for our children to enjoy."

Jon Dale leads American Forests' work in the Rio Grande Valley and Mexico and has known Trevino for a long time. He says that protecting plant diversity is central to building forest corridors for threatened and endangered species such as the northern aplomado falcon, Texas tortoise and ocelot. The Rio Grande Valley is home to America's only population of ocelot, a jaguar-like cat species that also lives across the border in Mexico.

"Benito's known as an innovator on seedling production. He was one of the first people to really get involved with it decades ago," Dale says. "But he's so much more than that. His deep knowledge, understanding and teaching about the importance of saving natural plant diversity in this threatened ecosystem is priceless."

Trevino's story began in 1947, when he was born one of 15 children in a migrant farm worker family in Starr County's Rio Grande City. His early years instilled a powerful sense of place and a deep respect for the native plants and their medicinal

Pages 40-41: Benito Trevino displays mesauite beans he just harvested, which are used to make flour and are culturally significant among indigenous communities of the Southwest **United States and** Northern Mexico. **Above: Trevino** shares a laugh with Jon Dale, American Forests' director for Rio Grande Valley and Mexico. "Benito's vision, and the things he's done to promote native plants and habitat restoration, carry significant weight in this region,"

Dale says.

Above: Trevino waters plants at his nursery, Rancho Lomitas, in Rio Grande City, Texas. He promotes to his customers plants that are native to the **Rio Grande Valleu** and works with partners on habitat restoration projects. **Below right:** Trevino looks over old family photos of his maternal uncle, Rodrigo Garcia, standing with his maternal grandmother, Daria Garcia (L); and his grandfather, Cresencio Garcia (R).

## it for wildlife, but preserving it for human beings, for us, for our children to enjoy."

- BENITO TREVINO, ETHNOBOTANIST, RANCHO LOMITAS



"It's pretty much been my whole life devotion to our native plants. To me it's not just preserving



grinds mesquite beans to make flour in a traditional bedrock mortar. which has been carved out of naturally occurring rock slab. Bottom left: Bedrock mortars have been used for food preparation by indigenous Americans for thousands of years and are an important part of Hispanic culture.

**Top left: Trevino** 

properties. He was so close to the border with Mexico that he could throw a rock into the Rio Grande River from his house.

He grew up living with and learning from his grandparents. They would often go weeks without traveling to town, he remembers, because they were poor and most of what they needed was available from the land.

"They would be constantly teaching us how can you survive in this harsh environment," Trevino says. "Learning how to weave, how to make rope, how to go to the forest and collect edible native plants or medicinal native plants, how to make soap — things that were needed for survival."

If someone was kicked by a horse during branding season, he learned how to look for manzanita (Barbados cherry) to reduce the swelling. If that same kick caused a headache or body pain, he would be sent out to gather willow bark and prickly pear cactus root to create a buffered aspirin.



Trevino demonstrates how he makes rope cords out of yucca leaves, a common plant native to the Rio Grande Valley.

THE LIFE AND TIM **OF BENITO TREV** 

"It wasn't until I was in college that I learned that salicylic acid was derived from the willow bark," he says. "So, they made that concoction — buffered, flavored aspirin - long before aspirin was invented."

While still in high school, Trevino was involved in the migrant farm workers movement. In 1966, several of his family members marched over 400 miles to the State Capitol in Austin as part of La Huelga, a protest against the injustice and poor treatment endured by migrant farmworkers. Part of the movement's legacy was President Lyndon Johnson's creation of National Hispanic Heritage Month.

"La Huelga was a sacrifice that many Hispanics throughout South Texas made to improve our way of life," Trevino says. "National Hispanic Heritage Month gives us an opportunity to reflect on the contributions that Hispanics have made to our country."

Trevino was unable to join the march himself because the day it began was also the day he graduated from high school and enlisted in the Air Force with an eye toward using the G.I. Bill to





## 50 BENITO JR

afford college. Stationed at Dyess Air Force Base in Abilene, Texas, he loaded nuclear weapons onto B-52s as part of Operation Chrome Dome, the United States' strategy to keep nuclear-capable bombers airborne 24/7 to quickly strike back after a Soviet attack.

With a chuckle, he notes that the man who recruited him to work on nuclear weapons said, "we're selecting you in a career that might be like repairing watches or something that requires a lot of hand skill, and where you have to be very calm!" Additional postings in Colorado, Michigan and Thailand followed before he left the military with enough money to finance the rest of his education.

At the University of Texas, Austin, Trevino turned his passion for plants into a lifelong mission. It was slow going as he also spent months working labor-intensive jobs, and often took night classes. On the advice of the dean, he went into botany even though he wasn't familiar with the word botanist at the time.

After graduation, he struggled to find work at a decent wage in botany, so he took a job as a laboratory technician at a chemical company, where he met his wife, Toni. In 1986 they bought a 177-acre ranch in the area where he grew up and named it Rancho Lomitas. They began growing and selling native plants before most people recognized their importance, while also renting *casitas* and leading educational tours about the importance of protecting native plants and animals. They've since added to Rancho Lomitas by purchasing the 95-acre ranch next door. Top left: As a certified weapons

loader of both

nuclear and

conventional

had a career in

the Air Force that

Southeast Asia.

It also paid for

studied botany and decided on his

**Below: Dale and** 

Trevino discuss

the Thornforest Conservation Plan

an ecosystem

conservation

strategy for

the declining thornforests of

the Rio Grande

North America's

most important

biodiversity

hotspots.

Valley, one of

life's mission.

college, where he

took him across the United States and

weapons during the late 1960s, Trevino

Rancho Lomitas has six soil types, meaning there are multiple mini-landscapes with different species across the ranch. It's home to at least six threatened native species, 198 species of birds, 16 species of snakes, 148 species of butterflies and at least 550 species of native plants.

Trevino grows plants and works on habitat restoration projects for Texas Parks and Wildlife, The Nature Conservancy and the U.S. Fish and Wildlife Service. He and Dale have discussed the conservation plan American Forests developed with the Thornforest Conservation Partnership, as well as the need to collect and grow more seeds to save this unique but disappearing ecosystem.

"It's such a privilege to be working with them, to know that what I'm doing can be multiplied so many times more with their efforts," Trevino says. "My goals are pretty much 100% in line with their goals because I love forests — there's something magical about a forest."

Rio Grande Valley native Gisel Garza, who leads American Forests' seed collection, processing and planting efforts in southern Texas, shadowed Trevino at his nursery when she joined the organization in 2021.

"I learned so much from him about seed collecting and growing of our native plants,"





As part of his mission to educate people about the importance of native plants and protecting biodiversity, Trevino leads regular tours at Rancho Lomitas. Here, he teaches local Boy Scouts how to plant seedlings. "I learned so much from him about seed collecting and growing of our native plants. He's an encyclopedia of knowledge about the biodiversity here and is passionate about conserving thornforests and serving as an environmental educator to our community."

- GISEL GARZA, PROJECT MANAGER FOR THE RIO GRANDE VALLEY, AMERICAN FORESTS

she says. "He's an encyclopedia of knowledge about the biodiversity here and is passionate about conserving thornforests and serving as an environmental educator to our community."

Trevino gets emotional recalling a big restoration project that he was struggling with for weeks, trying to figure out which species he should use and where to convert a blank pastureland into a native habitat. Finally, while sitting at Rancho Lomitas in the early morning, he watched the sun rise, and as the fog began to dissipate he noticed the incredible interplay of light, moisture, land and trees.

"It was just incredible, the different colors of the leaves, the way they would move with the wind and the way the light was shining," he says. "And I thought, 'I'm going to mark this area and get my notepad.' So, I spent three days studying that whole environment to transport it over to my project to create that beautiful scene that nature created for us."

Trevino recently hit a major milestone with his millionth plant grown from a seed, leaving him reflective about his legacy.

"Hopefully I was able to at least educate people of what we need and how important our native things are here, not just for the animals, but for the humans. We need all these trees and plants and things as much as the reptiles and birds need them. I hope that I was able to at least start a little spark in young minds that will continue doing what I've started to do."  $\blacklozenge$ 

Lee Poston is a communications advisor who works with mission-driven organizations and writes from University Park, Md.





Above: College for Creative Studies woodshop students learned about African American culture and history, trees in Detroit and climate justice while making wood into art.





#### Award-winning climate justice exhibition drives partnership between Detroit African American museum and arts college

The d.Tree exhibition, a testament to the power of collaboration, zero waste and storytelling, arises from a partnership between Detroit Cultural Center neighbors: the Charles H. Wright Museum of African American History and the College for Creative Studies. This award-winning initiative transforms dying museum campus trees into narratives on "What Detroit Trees have Seen," bridging the city's past and present. Twelve makers extended the life of these Detroit trees by conveying stories of resilience and adaptation with various African material cultural threads. By bringing climate creatives together, we can admire the past and shape a regenerative future. Beyond storytelling, d.Tree Studio symbolizes climate actions, underscoring when two cultural institutions came together to support The City of Detroit's Sustainability Action Agenda. Partners like American Forests, with its Tree Equity Score tool, bolsters the exhibition's focus on Detroit's 75,000 tree initiative. Don't miss the exhibition at the Wright Museum from July 20 to December 10, 2023. Learn more: www.thewright.org/d-tree-studio

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