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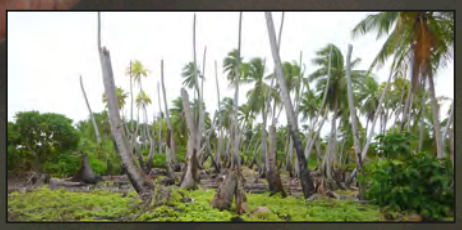
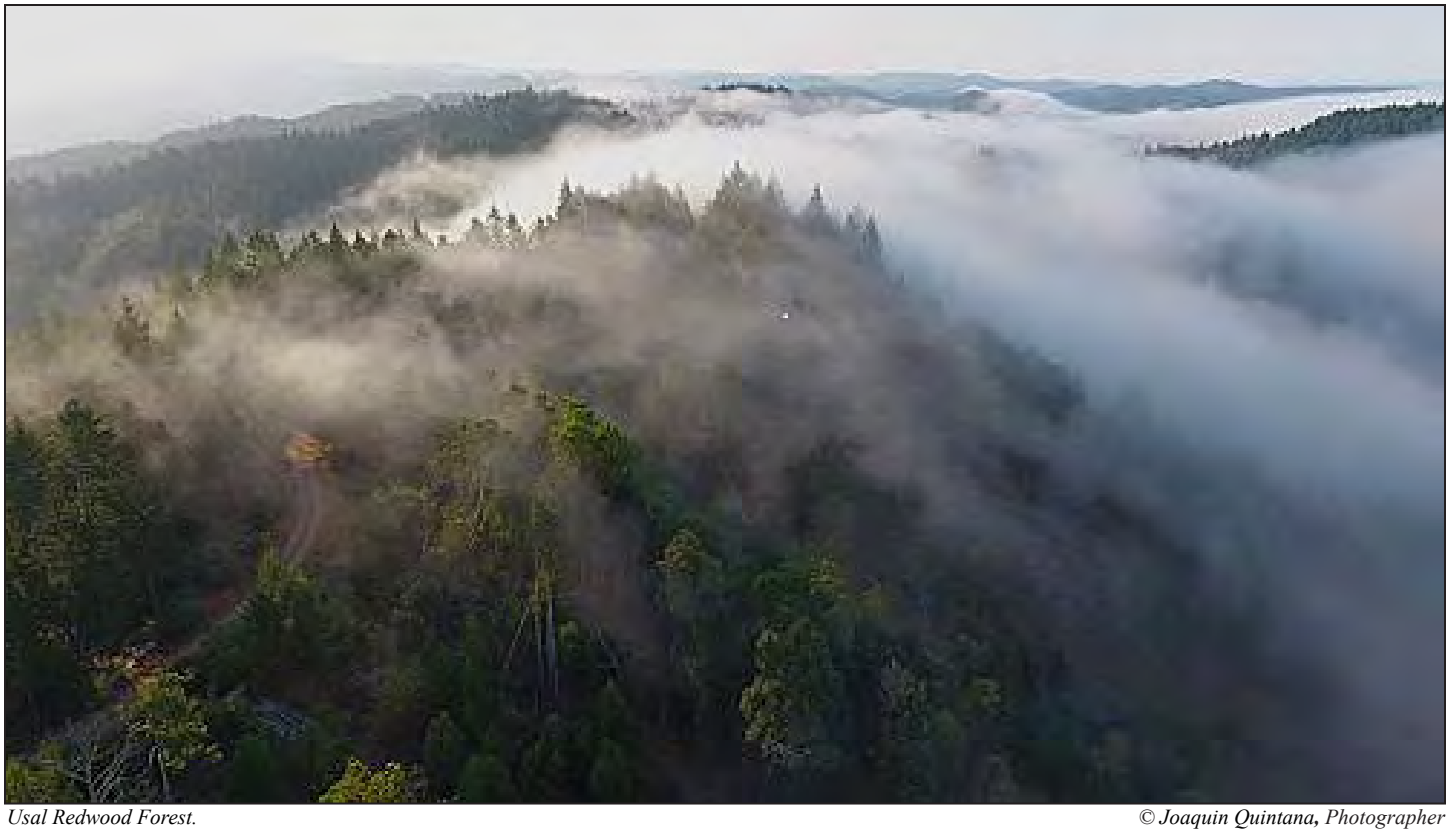


GLOBAL WARMING AND THE ENVIRONMENT



Usal Redwood Forest. *© Joaquin Quintana, Photographer*

REDWOOD FORESTS
CLIMATE CHAMPIONS

by Lin Morgan Barrett
Community Development Director, Redwood Forest Foundation

Although all trees pull carbon dioxide from the air and release oxygen, helping to stabilize the climate, old-growth redwood forests store more carbon above-ground per acre than any other forest on earth!

The loud, incessant hammering of the pileated woodpecker brought back memories of growing up in California's majestic redwoods. It was there, as a child, I first heard that hammering and was amazed to see "Woody Woodpecker" at work on a nearby snag. While most of the ancient giants were gone even then, the remaining goliaths of my childhood were enthralling.

The quiet in the redwoods, the world's tallest trees, is other-worldly. Winter then brought vast runs of steelhead and salmon that dwarfed the small riverbed they spawned in.

These beautiful redwood forests are climate champions! Although all trees pull carbon dioxide from the air and release oxygen, helping to stabilize the climate, *old-growth redwood forests store more carbon above-ground per acre than any other forest on earth.*

Coast redwood, Sequoia Sempervirens, occur naturally only on a narrow strip of land, stretching along the Pacific Ocean from Monterey, California to southwest Oregon. Despite 150 years of aggressive over-harvesting, the remaining redwood forests still provide vital habitat for a variety of fish and wildlife. Old growth redwood treetops contain an array of canopy dwellers, some of whom never

Ancient Redwood misshapened by the wind. *© Eric Mulder, Photographer*

continued on page 17

continued from page 16

REDWOOD FORESTS CLIMATE CHAMPIONS

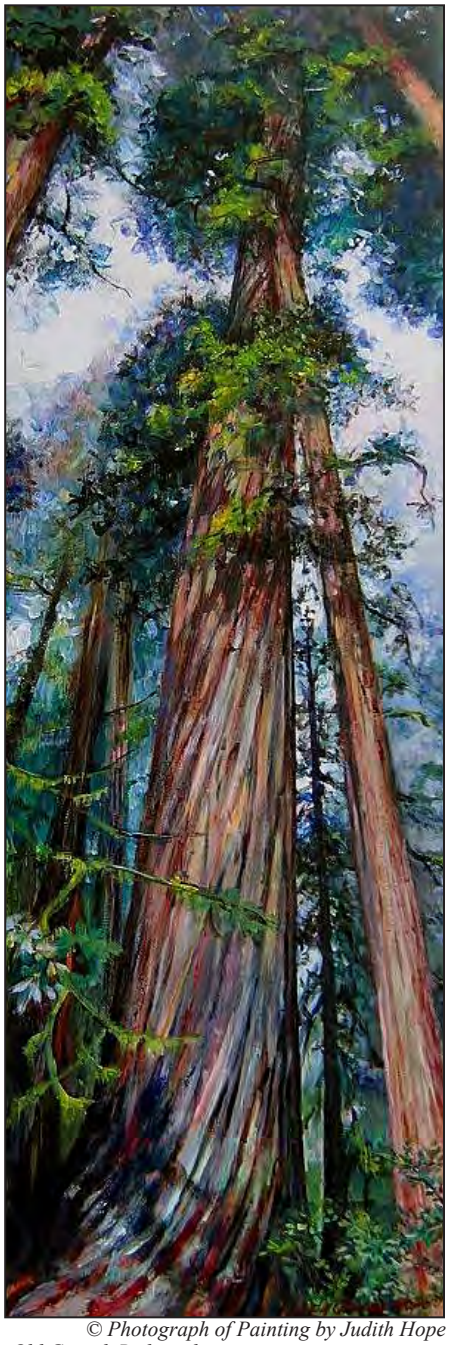
touch the ground. Redwood forests are home to mountain lions, black bear, Roosevelt elk, bald eagles, and my old friend the pileated woodpecker. Some species, however, are barely hanging on: Northern Spotted Owls, marbled murrelets, salmon, steelhead and various amphibians struggle to survive in logged-over stands.

Redwood giants, one of the world's fastest growing conifers, reach heights of more than 350 feet, and can live 2,000 years. Some redwoods are 24 feet wide and weigh 1.6 million pounds. Hyperion, the world's tallest tree, is a 379.7 ft. tall redwood. Redwoods have existed on this planet for more than 240 million years. As their name suggests, coast redwoods need a moderate, coastal climate to survive. The region's frequent fog is crucial. Like the Sequoia Gigantea in the Sierras, redwoods have shallow root systems that require abundant water. Coast redwoods, however, typically get their water from rain and fog, not snowmelt. They get 30-40% of their moisture from fog. Their large root systems often extend 100 feet, intertwining with roots of other redwoods. Interestingly, a cut redwood can clone itself, and young redwoods often sprout from their parents' base, drawing nutrients from their roots.

Only five percent of the ancient redwood forest remains. Redwood forests are magnificent; the wood they provide is an unequaled building product. It is durable, resistant to rot and termites, non-warping, and relatively soft. Beginning with the California Gold Rush and through the 20th century, redwoods were cut rapaciously to build homes and commercial buildings. A successful logging industry grew to meet building needs that, along with fishing, created prosperous rural areas. Over the 20th century, however, both resources dwindled severely, enraging environmentalists. By the 1980s, violent conflict between industrial and environmental interests rocked the redwood region. The *Timber Wars* saw neighbor pitted against neighbor; fights broke out at local youth soccer games. *Earth First!* and others, outraged at the assault on these magnificent forests and ecosystems, staged *Redwood Summer.* Deadly violence ensued. The scene was comparable to today's pipeline and fracking confrontations, conflicts that significantly impact local communities.

Fortunately, local leaders emerged recognizing that the resource was threatened, along with the economy, ecology and the social fabric of the region. Warring northern California coastal residents begrudgingly came together to seek non-violent solutions to protect and restore the forests, to provide jobs, and support local economies. A tall order!

In 1997, after nearly a decade of contentious meetings, the Redwood Forest Foundation, Inc. (RFFI) was born. Leaders of this remarkable grassroots movement worked with warring factions, all neighbors and forest stakeholders, for almost a decade to find common ground. Art Harwood, a local mill owner and RFFI's first President, RFFI Founder, Henry Gundling, a financial advisor and forest owner, University of California science advisors Pete Passof and Greg Giusti, portable mill operator, Bill Heil, and environmental leaders, Linda Perkins and Meca Wawona, moved into the forefront of the highly contentious conversation. Others joined, and over time loggers, foresters, scientists, environmental activists, financiers, and residents carefully crafted an agreement to establish a nonprofit organization to: *acquire, protect, restore, and manage forestlands and other related resources in the Redwood Region for the long-term benefit of the communities located there.* They sought to establish local control over the protection, restoration and use



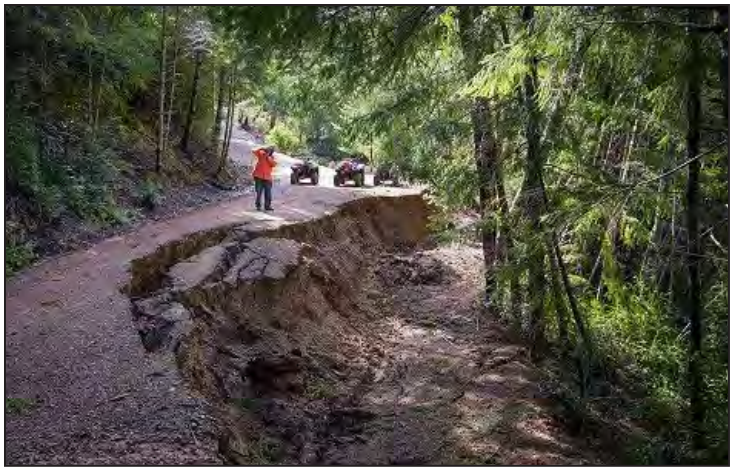
© Photograph of Painting by Judith Hope Old Growth Redwood.

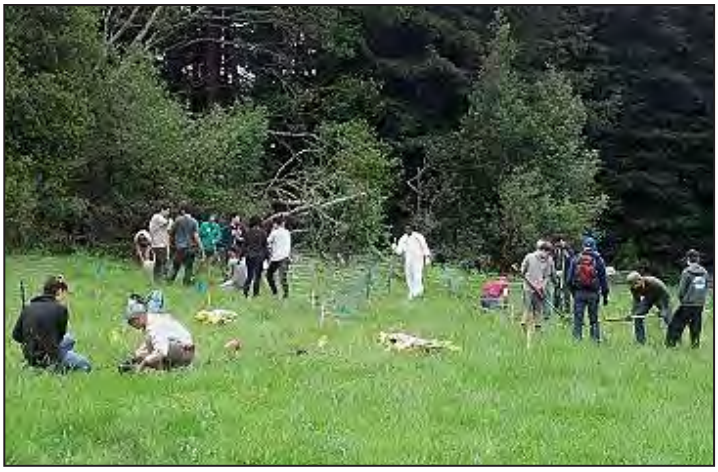
of natural resources, principally the coast redwood ecosystem. They wanted to ensure local ownership, eschewing the loss of local control that accompanies absentee industry or government ownership. The ultimate goal was to establish working community forests managed sustainably to protect and restore the ecosystem, provide wood products,

continued on page 18

continued from page 17

REDWOOD FORESTS CLIMATE CHAMPIONS





© ***LEFT:*** *Photograph provided by www.rffi.org* ***RIGHT****: Mark Welther, Photographer*
LEFT: *RFFI's Joaquin Quintana assessing road damage from epic winter storm..* ***RIGHT:*** *RFFI Community Redwood Planting in Redwood Regional Park.*

support the local economy and eventually invest any excess revenue into the community.

The founders engaged Tom Tuchmann, President US Forest Capital, to help them craft a sophisticated market-based strategy that would use private capital to leverage public and philanthropic dollars to acquire, restore and retain control of local forests. The strategy also required "monetizing ecosystem services." This is fancy jargon for creating funding for 'services' a forest provides: e.g., clean water, clean air, carbon storage, fish and wildlife habitat and recreation. They met with policy makers to help shape policies that would bring these ideas to fruition.

One successful policy change was the creation of California's carbon credit program. In 2006, the State of California enacted AB32, the "Global Warming Solutions Act." This law empowered the California Air Resources Board to create a market-driven system to reduce California's carbon dioxide emissions, an act that led to the state's pioneering, cap-and-trade climate action program. AB 32's goal was to reduce carbon emissions in CA to the 1990-level by the year 2020. In 2017, AB32 was extended to 2030 with a mandate to reduce carbon emissions an additional 40% below 1990-levels by 2030.

In 2007, RFFI purchased the Usal Redwood Forest in northern California. With an environmental loan from the Bank of America, they now owned and sustainably manage a 50,000-acre forest that is almost twice the size of the city of San Francisco, establishing the largest working community forest in California, and perhaps the nation. In 2020, RFFI is now embarking on a second forest purchase, the Reist Ranch. (rffi.org/ReistRanch).

From the outset, Bank of America cast this loan as an investment aimed at addressing climate change. RFFI protected the land with a conservation easement, assuring it will remain an unfragmented, sustainably managed forest in perpetuity. RFFI helped secure funding from the California Coastal Conservancy to preserve an ocean-front 1,000-acre parcel containing old-growth redwoods-then part of Usal. This transaction protected these ancient trees forever. The conservation easement sale, funded by the California Wildlife Conservation Board, and the preservation sale of 1,000-acres of ancient redwoods, were used to pay-down the debt - examples of using private capital to leverage public and philanthropic dollars to protect forests.

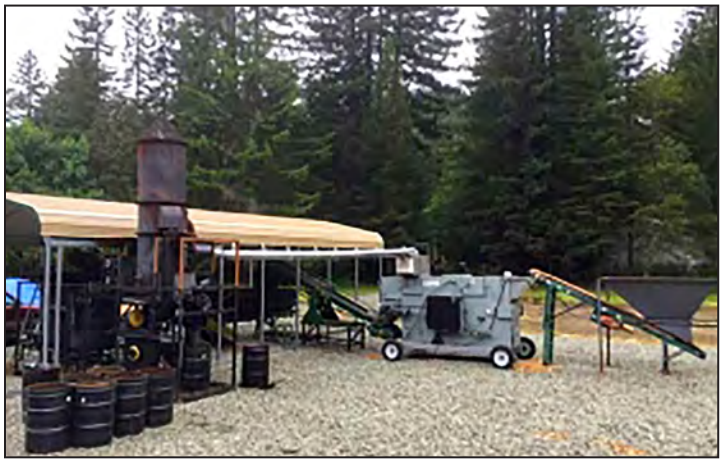
During the past decade, under the leadership of President Mark Welther, RFFI has improved the ecology and economy, while supporting social equity in the redwood region. Our work simultaneously addresses climate disruption, forest resilience, drought and prevention of catastrophic forest fires. RFFI owns the Usal Forest through its subsidiary, Usal Redwood Forest Company (URFC), led by Chief Forester Linwood Gill. We have completed $5,000,000 of forest and watershed restoration in two major watersheds, including northern California's most significant salmon-bearing streams. Since 2007, we have removed silt-producing roads, improved salmon habitat,

© ***Mitzi Rider****, Photographer*
RFFI's Usal Redwood Forest forestry staff; l-r: Karen Youngblood, Linwood Gill, Travis Munoz, Joaquin Quintana, absent Jeff Houser.

continued on page 19

continued from page 18

REDWOOD FORESTS CLIMATE CHAMPIONS



LEFT: *Biochar machine.* ***RIGHT:*** *Barrels of Biochar.*

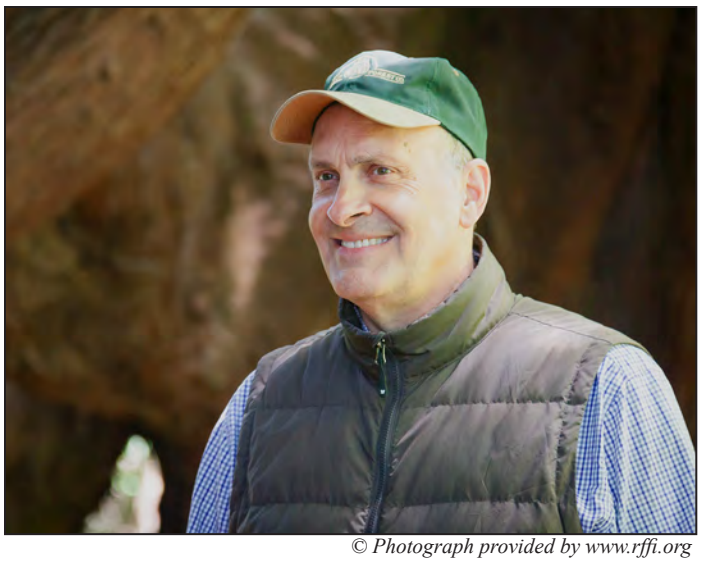
© Raymond Baltar, Photographer, FFI Biochar Project Manager.

and salmon have returned. Our redwood reforestation program, including Plant-a-Redwood-Now, has planted more than 135,000 redwoods. URFC annually contributes over $3.5 million to the local economy, has created 170 living-wage jobs, has conducted four years of sustainable timber production, and is in full compliance with our loan. Overall, RFFI's carbon project remains California's largest forest carbon sequestration project, having sequestered more than five million metric tonnes of carbon. Our forest management is FSC® C124496 certified, and adheres to California Department of Forestry regulations. Our work is governed by local residents, steeped in forestry, finance, science and social entrepreneurship. An actively engaged community advises forest management.

Additionally, we developed a climate-friendly method of eliminating competing species that choke out the conifers, by pioneering forest-based biochar production. RFFI removes competing brush and hardwoods and converts them to North Coast Biochar, using a process called pyrolysis. Biochar is then used by farmers as a carbon-rich soil amendment. It heals the earth by holding nutrients and water in the soil, and stores carbon for hundreds, perhaps thousands of years. This synergistic project, "Forest to Farm and Beyond," supports forest resilience, reduces the danger of catastrophic forest fires, reduces agricultural water use and provides significant benefits to soil and the climate.

The Intergovernmental Panel on Climate Change (IPCC), commissioned by the United Nations, has provided objective, scientific information about the risk of human-induced climate change, and its natural, political, and economic impacts, as well as possible solutions. The IPCC's Fifth Assessment Report provided critical scientific input into the 2015 Paris Agreement. They have quantified the consequent natural, political, and economic impacts and risks. The IPCC and other scientists tell us we have 8-10 years to implement climate change solutions or the world will reach irreversible tipping points after which life on earth will become increasingly unbearable. Scientists have identified the most powerful natural climate solutions, along with the required life-style and technological changes. Natural solutions are not the complete answer, but they sequester carbon while we transition from reliance on fossil fuels and develop new technologies that draw carbon out of the atmosphere. Natural solutions can buy time as we make important life-style changes and implement other solutions.

Our pioneering climate action landed RFFI a significant role in *Ice on Fire*, the science-based Leonardo DiCaprio HBO climate disruption documentary. The film premiered at the Cannes Film Festival in May 2019, and has since generated global interest and support. Our sustainable forest management, tree-planting project, major forest landscape conservation and restoration, Usal Forest Carbon Project, along with our biochar project, catapulted



© Photograph provided by www.rffi.org

Mark Welther, RFFI President and CEO, being interviewed for "Ice on Fire", DiCaprio HBO climate disruption documentary.

continued on page 20

continued from page 19

REDWOOD FORESTS CLIMATE CHAMPIONS

RFFI onto the world stage. RFFI's demonstrated ability to transcend regional conflict and carve out a new inclusive approach - providing community control over the use of forest resources - is considered a global model for natural solutions to climate change. It is an example of 'Project Drawdown' founder Paul Hawken's description of Real Change. "*Real change occurs from the bottom up; it occurs person to person, and it almost always occurs in small groups and locales and then bubbles up and aggregates to larger vectors of change*."

Ice on Fire Director Leila Conners and Producer Mathew Schmidt chose RFFI for the film because we are successfully employing three of the five most effective natural solutions to climate disruption:

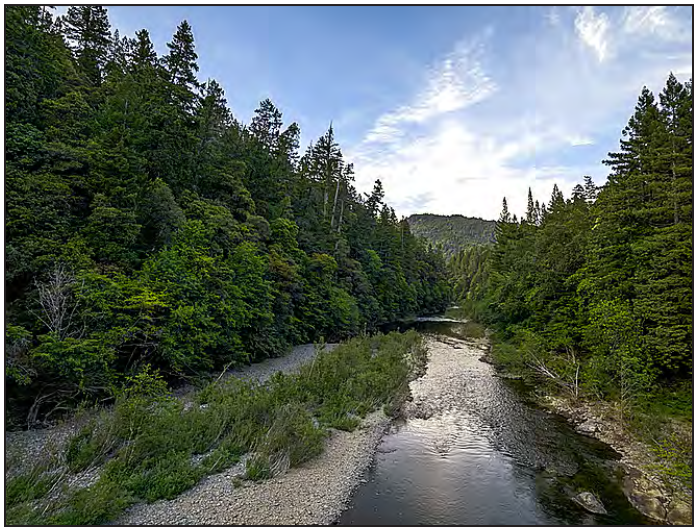
1. Tree planting;
2. Sustainable forest conservation and management;
3. Sustainable agricultural practices, e.g., converting forest waste to biochar and placing it in the soil.

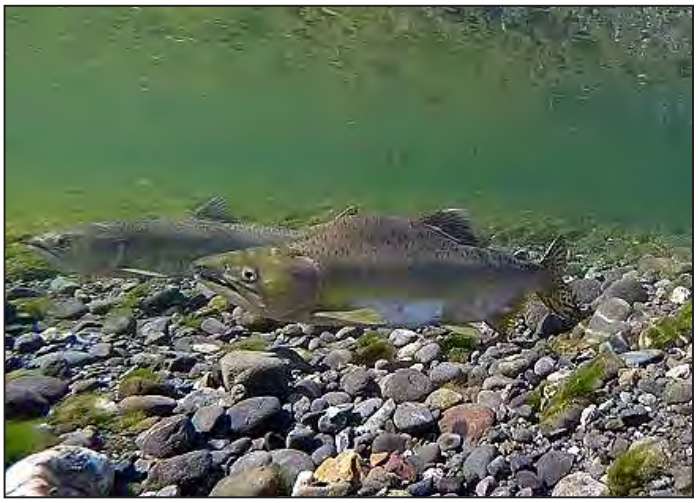
RFFI continues to work with Conners and Schmidt through Tree Media, on "Catching Carbon," a program using natural solutions and Direct Air Capture, a process that draws carbon from the air and stores it deep within the earth. Catching Carbon is a prototypical approach that uses Earth's major systems - oceans, forests, soil - to heal the planet while implementing promising new climate technology.

If you want to address climate change, we suggest you *Start With Forests!* Protect, conserve, restore, reforest and sustainably manage existing forests. Plant trees! Mature forests and tree planting have powerful carbon sequestration capacity, as do kelp beds and tidal pools. Together, these can serve as primary methods of sequestering carbon over the next eight to ten years that are critical to avoid reaching irreversible climate tipping points. *Proceedings of the National Academy of Sciences*, reports that nature-based solutions can provide up to 37% of the emission reductions needed by 2030 to keep global temperature increases under 2° C.

The Redwood Forest Foundation has been featured in Ice on Fire, and honored by other organizations for pioneering climate action. While sustainable management of redwood forests holds special climate benefits because of the species' powerful carbon sequestration capacity, the RFFI Model is applicable to forests of all types. We receive requests from around the world for guidance and consultation.

There is a growing awareness and desire to replicate the RFFI model because it is uniquely designed to provide an immediate, inclusive, thoughtful, scientific, and market-based response to the greatest crisis the civilized world has ever faced.





TOP *© Photograph provided by Tree Media*
BOTTOM: *© Photograph provided by www.rffi.org*

TOP: *South Fork Eel River-a major salmon-bearing river.*
BOTTOM: *RFFI cleared streams of huge log jams, creating fish-friendly conditions in this tributary. Salmon are returning after 20 years!*

ABOUT THE REDWOOD FOREST FOUNDATION

The Redwood Forest Foundation, Inc. (RFFI), a 501(c)(3) non-profit, is a grass-roots organization. We are loggers, environmentalists, mill-owners, community activists, foresters, economists, financiers and others all working together to establish community- based forests that provide both critical habitat for increased biodiversity and improved regional economic vitality.

Our mission is to acquire, protect, restore, and manage forestlands and other related resources in the Redwood Region for the long-term benefit of its regional communities.

More information about RFFI: www.rffi.org

Contact Lin Morgan Barrett at: morgan@rffi.org

Scientific Reference Sources Available at: https://www.rffi.org/climate-action/