

# Impact Report 2023





Lower banks of the Yo dok kum seo (Nisenan for American River)

## Land Acknowledgment

Blue Forest is a remotely based organization with roots in what we now call Sacramento County on the traditional, ancestral, and contemporary homelands of the Miwok and Nisenan People and the gathering places of the Patwin Wintun and Maidu People. These homelands include the Sacramento, American, and Cosumnes Rivers, sacred sites, and cultural landscapes that make up their rich heritage.

We recognize Wilton Rancheria Tribe, the only federally recognized tribe in Sacramento County, and the Native Nations, both federally and non-federally recognized, that call the greater region home. Blue Forest acknowledges that these Nations have maintained meaningful relationships with their lands, despite missions, unratified Treaties, and termination legislation that forcibly removed Peoples from and divided up homelands. Native Nations have maintained and reclaimed lands leading historic preservation, land stewardship, and land management from which Blue Forest continues to learn in advancing our commitment to resilient landscapes, ecosystems, and communities.

As an organization with team members and project sites located across many lands, we task each team member with learning about the history of the lands upon which they live and the landscapes they serve. Team members learn about the Indigenous Peoples who call the lands home now and historically and take meaningful action to support local Indigenous communities.

Blue Forest recognizes and affirms Tribal sovereignty and self-determination across all lands where we work. We understand that learning from the original stewards of these lands is essential to a resilient and more equitable future and are committed to continuously listening, learning, and amplifying Indigenous voices. Through our Indigenous Partnerships Manager and team members, we are implementing frameworks and standards for Tribal engagement across each stage of the project development process to facilitate meaningful partnerships with Native Nations and support transitions to Indigenous land management and reclamation. We are committed to supporting Indigenous-led initiatives by directing resources, such as the [Forest Resilience Bond](#), to Tribal land management.

For more information on how we drafted this statement in partnership with community, visit [An Intentional Approach to Land Acknowledgement](#) or contact [Indigenouspartnership@blueforest.org](mailto:Indigenouspartnership@blueforest.org)



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With the launch of the California Wildfire Innovation Fund and continued development of Forest Resilience Bonds, Blue Forest has demonstrated a continued commitment to a system-level approach to supporting forest restoration. These programs complement public resources and provide much-needed financial and technical support to forest management implementation activities."



Helena Murray  
Wood and Biomass Utilization Program Manager,  
USDA Forest Service Region 5

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## Letter from the CEO

At Blue Forest, we take pride in bringing together science, finance, and people to make landscape restoration happen. 2023 was a year of strategic planning, deploying systems-level solutions, and delivering major milestones. Most notably, we announced the successful completion of our pilot project, the Yuba I Forest Resilience Bond (FRB), alongside our partners. The Yuba I FRB supported restoration efforts to protect 15,000 acres on the Tahoe National Forest in California. In addition, we launched the Rogue Valley I FRB, the first project financed by the FRB Catalyst Facility, supporting the incredible work of Lomakatsi Restoration Project.

Our work is grounded in science. In 2023, Blue Forest's science team published five research papers exploring the multiple benefits of forest restoration, as we continued to grow the field of conservation finance. We also completed 11 benefit analyses for FRB projects in the pipeline in California, Oregon, Washington, and Montana, analyzing beneficiary motivations for participating in landscape restoration.

In 2022, we established Blue Forest Asset Management (BFAM). Under BFAM, in 2023 we launched the California Wildfire Innovation Fund (CWIF) and closed on its first two investments, more than doubling our assets under management from \$18M to \$48M. We are grateful to be named an ImpactAssets50 Emerging Impact Manager for the third consecutive year.

Everything we do is partnership-driven. This year, we began implementing Native Nation engagement standards of practice across all our active restoration projects and were honored to support Lomakatsi Restoration Project in planning the Inter-Tribal Ecosystem Restoration Peer-to-Peer Learning Summit. We continued to deepen our partnership with the USDA Forest Service through the renewal of a five-year Memorandum of Understanding (MOU) and as a recognized partner in priority regions and Wildfire Crisis Strategy landscapes.

Internally, we continue to build up our own capacity, strengthening our teams with DEI and Tribal Engagement training. We were thrilled to welcome nine new team members with experience in finance, project development, and external affairs.

Every milestone reached and new initiative launched is made possible by our funders and partners. Thank you for your important role in accelerating ecological restoration through conservation finance.

In partnership,

*Zach Knight*

**Zach Knight**  
Chief Executive Officer



In October, we gathered at Whisptree in Boonville, CA.



# 2023 Year at a Glance

## Science



5

Research Papers Published

11

Benefit Analyses for Potential Project Beneficiaries

16

Conference Presentations

## Finance



\$48M

in Assets Under Management

\$9.8M

Deployed for Ecosystem Resilience

13

New Investor Commitments to Support Forest Restoration

10,379

Acres Protected (4,127 Acres Treated)

## Collaboration



22

Active Project Development Partners

89

Jobs Supported by Forest Resilience Bonds

9

Blue Forest Staff Hired

9

Active National Forest Engagements for FRB Project Development





# Project Development





## Project Development at a Glance

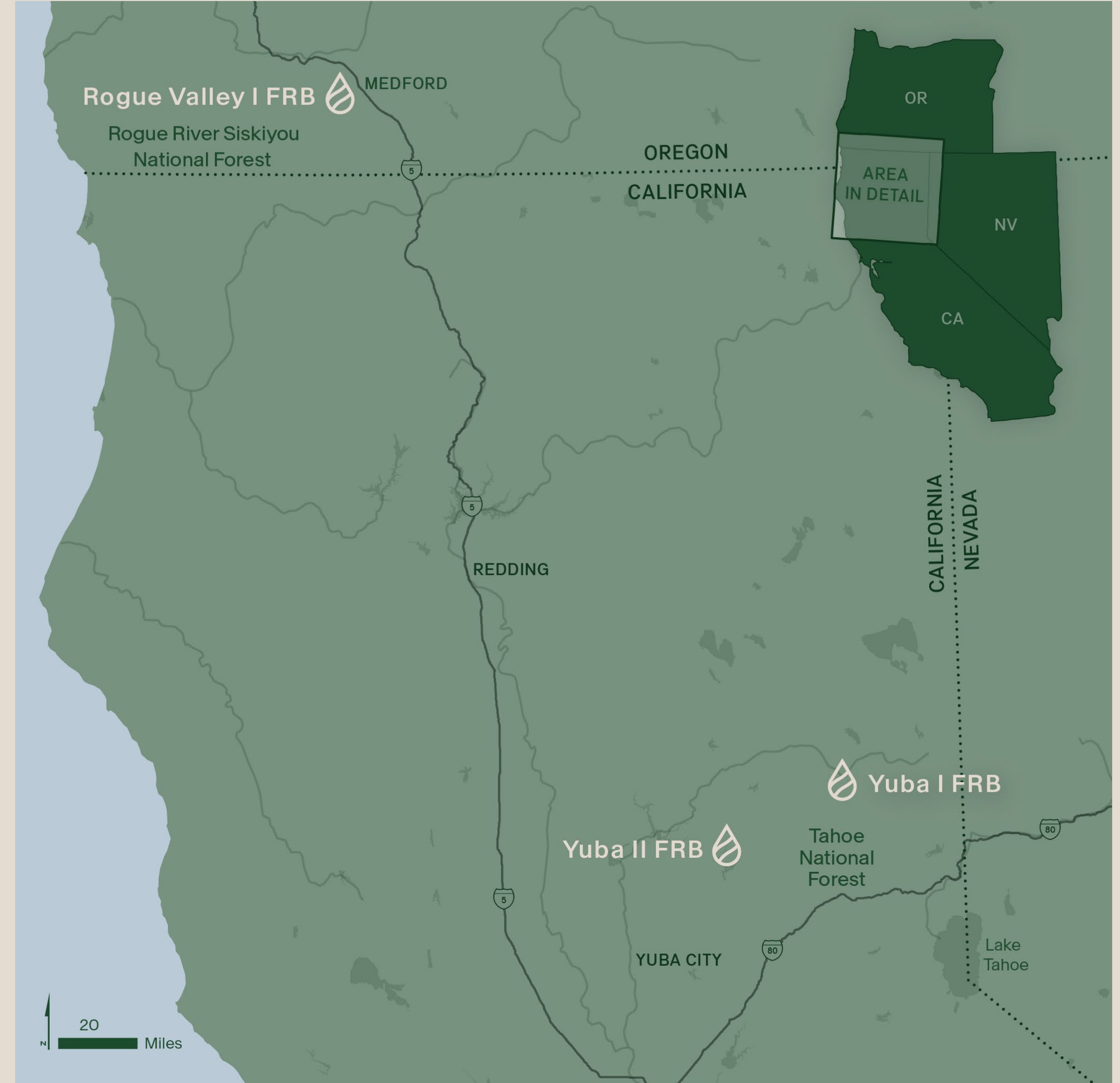
2023 was a year of on-the-ground implementation: we launched the Rogue Valley I FRB, closed out the Yuba I FRB, continued to make progress on the Yuba II FRB, and grew our FRB project pipeline. The impacts of our active projects are tracked by our implementation partners, and mapped to seven relevant Sustainable Development Goals: Clean Water & Sanitation; Affordable & Clean Energy; Decent Work & Economic Growth; Sustainable Cities & Communities; Climate Action; Life on Land; and Partnerships for Goals.



Wildfires in the U.S. are increasing in frequency and severity due to past fire suppression policies and a changing climate. More than ever, it is essential to scale financing models for ecosystem restoration efforts that have the potential to reduce wildfire risk, improve watershed resilience, and protect communities. The Rockefeller Foundation is a long-time supporter of Blue Forest and is excited to see the evolution of their work with the launch of the FRB Catalyst Facility.”



**Maria Kozloski**  
Senior Vice President of Innovative Finance,  
The Rockefeller Foundation







## 2023 Forest Resilience Bond Impacts (Rogue Valley I FRB, Yuba I FRB, Yuba II FRB)

**\$6.30M**

Deployed for Ecosystem Resilience

**89**

Jobs Supported

**9**

Active National Forest Engagements for FRB Project Development

**10,379**

Acres Protected (4,127 Acres Treated)



## Ecosystem Benefits

**35,280**

MT CO<sub>2</sub>e of Avoided Wildfire Carbon Emissions

**1,080**

MT CO<sub>2</sub>e of Biopower Carbon Benefits

**35,700**

Acre-feet of Water Supply Protected

**5,400**

Tons of Biomass Utilization

**49,480**

MWh of Hydropower Protected

**1,620**

MWh of Renewable Energy Generated by Biomass



## Management Activities

**2,661**

Acres of Prep and Layout

**3,107**

Acres of Fuels Reduction

**963**

Acres of Prescribed Fire

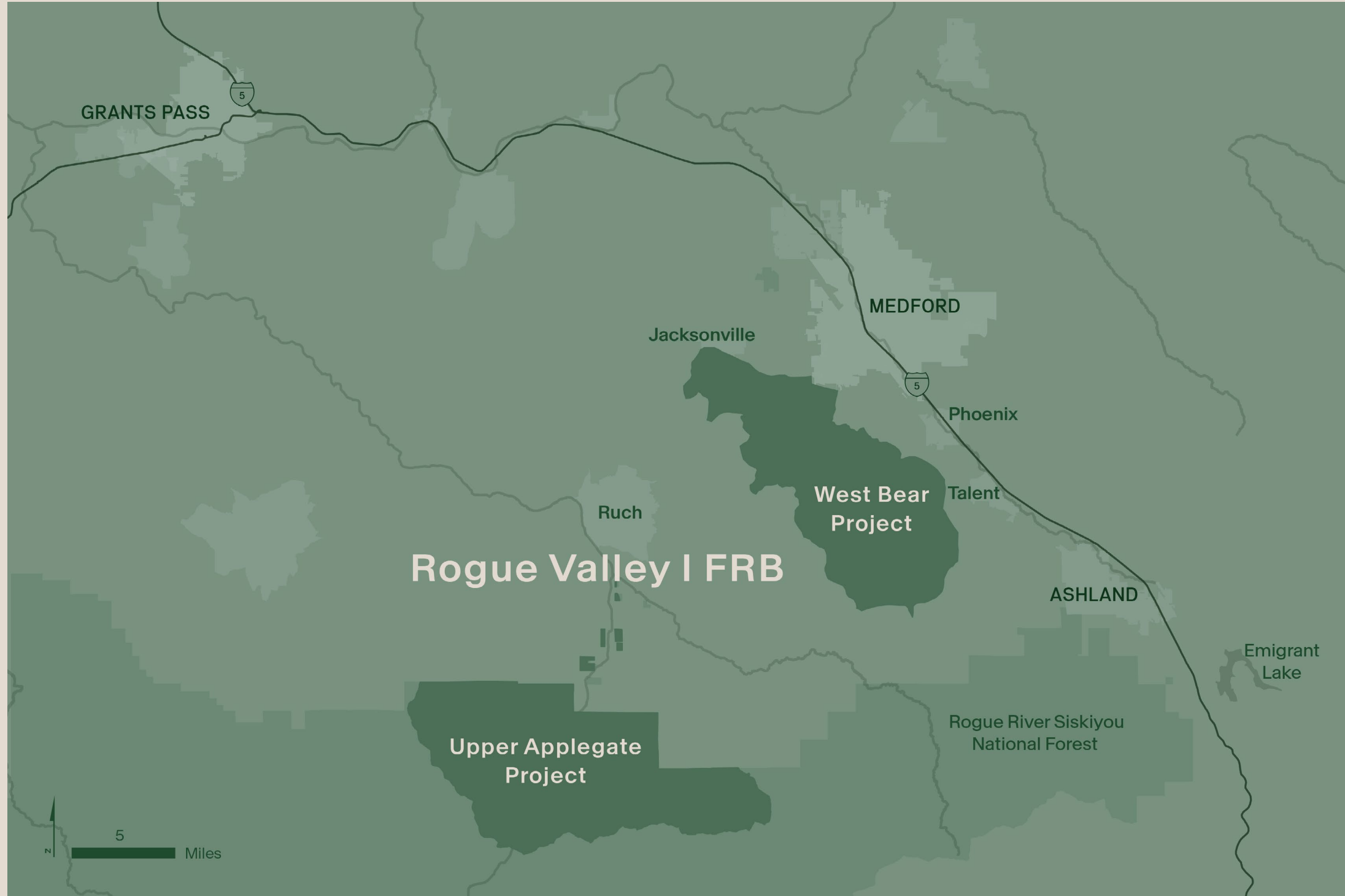




## The Rogue Valley I FRB: Our First FRB in Oregon

The Rogue Valley I FRB, the first project financed by Blue Forest's [FRB Catalyst Facility](#), supports the implementation of two restoration project areas (West Bear and Upper Applegate), financing the protection of over 79,000 acres on the Rogue River-Siskiyou National Forest and private lands in southern Oregon. The areas protected by these projects contain 7 of [Oregon's 30 most](#)

[wildfire-threatened communities](#). Community-based nonprofit [Lomakatsi Restoration Project](#) is leading project implementation on this landscape. Financing an FRB for restoration in this region not only reduces the risk of catastrophic wildfire, but enables additional benefits such as local job security, economic development, and water security.



### 2023 Rogue Valley I FRB Impacts

**\$3.75M**

Deployed for Ecosystem Resilience

**7,760**

Acres Protected (2,829 Acres Treated)

**53**

Jobs Supported



### Ecosystem Benefits

**26,690**

Acre-feet of Water Supply Protected

**36,990**

MWh of Hydropower Protected

**26,380**

MT CO<sub>2</sub>e of Avoided Wildfire Carbon Emissions



### Management Activities

**2,646**

Acres of Prep and Layout

**2,329**

Acres of Fuels Reduction

**500**

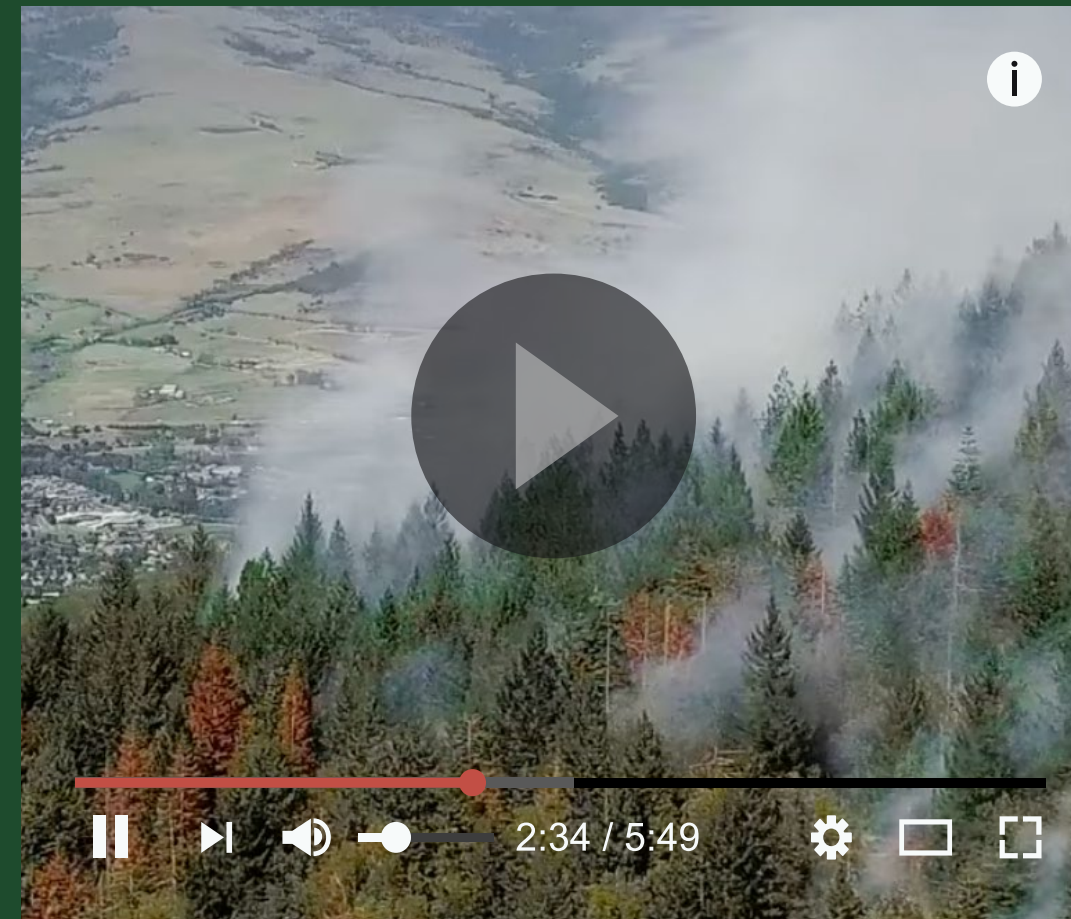
Acres of Prescribed Fire



### Financing Holistic Community Wildfire Protection with Lomakatsi Restoration Project

The Rogue Valley I FRB implementation partner, [Lomakatsi Restoration Project \(Lomakatsi\)](#), is a grass-roots non-profit organization that has led critical restoration initiatives in southern Oregon and northern California for almost 30 years. Lomakatsi takes a holistic approach to landscape restoration, centering resilient ecosystems and communities across all lands and striving to advance social equity through education, Tribal partnerships, and workforce development programs.

In addition to supporting restoration activities on the ground, the Rogue Valley I FRB supports Lomakatsi's workforce development and capacity efforts, providing them with "confidence [they] have the resources to go forward with these big projects," according to Lomakatsi Executive Director Marko Bey. The Rogue Valley I FRB finances Lomakatsi's implementation of the West Bear All-Lands Restoration Project—Blue Forest's first project supporting work on private lands—and the Upper Apple-gate Watershed Restoration Project, which together protect more than 79,000 acres to improve community wildfire protection, enhance wildlife habitat, and reduce the risk of severe wildfire. Project implementation is supported by [Lomakatsi's Tribal Youth Ecological Forestry Training Program](#), which helps develop Tribal workforce capacity to restore Indigenous homelands.

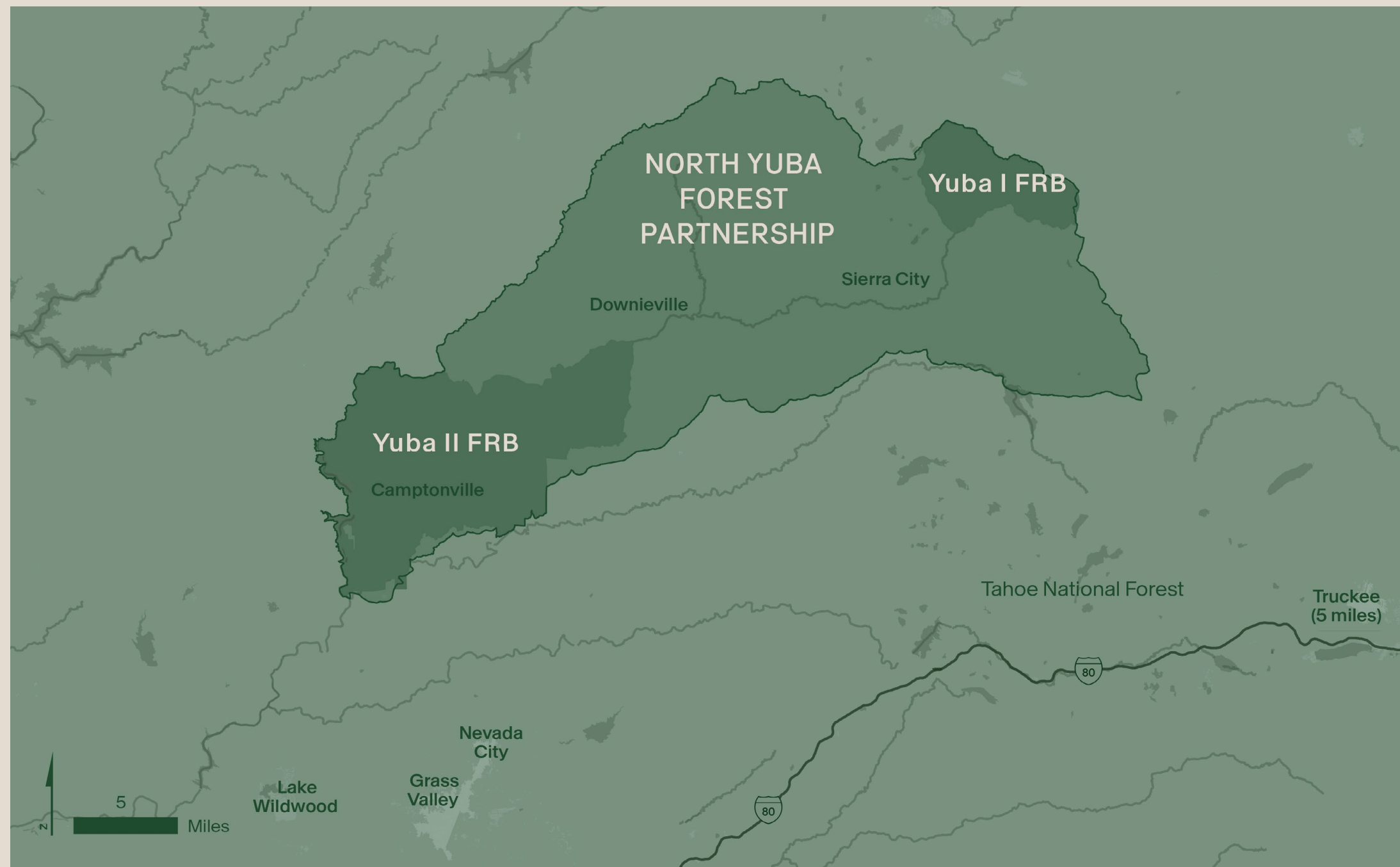




## The Yuba I & II FRBs: Successful Pilot to Scale

Located on California’s Tahoe National Forest, the Yuba I and Yuba II FRBs are Blue Forest’s first FRBs. Together, they finance the protection of 65,000 acres within the [North Yuba Forest Partnership \(NYFP\)](#) landscape. In 2023, [National Forest Foundation \(NFF\)](#) continued to lead implementation to support critical ecosystem restoration on both FRBs.

In 2023 we closed the Yuba I FRB, marking a conservation finance industry milestone. The Yuba I FRB returned all investor capital in line with expectations, financing restoration efforts in a 15,000-acre planning area on the Tahoe National Forest, which reduced the risk of catastrophic wildfire among other benefits.



### 2023 Yuba I and Yuba II FRB Impacts

<b>\$2.55M</b>	<b>\$153M</b>	<b>2,619</b>	<b>36</b>
Deployed for Ecosystem Resilience	Allocated to the North Yuba Wildfire Crisis Landscape by the USDA Forest Service	Acres Protected (1,298 Acres Treated)	Jobs Supported



### Ecosystem Benefits

<b>9,000</b>	<b>12,480</b>	<b>8,900</b>	<b>1,080</b>	<b>5,400</b>	<b>1,620</b>
Acre-feet of Water Supply Protected	MWh of Hydropower Protected	MT CO <sub>2</sub> e of Avoided Wildfire Carbon Emissions	MT CO <sub>2</sub> e of Biopower Carbon Benefits	Tons of Biomass Utilization	MWh of Renewable Energy Generated by Biomass



### Management Activities

<b>778</b>	<b>463</b>
Acres of Fuels Reduction	Acres of Prescribed Fire



# Scaling Landscape Restoration in the Yuba River Watershed

## The Role of Yuba Water Agency in Scaling the Forest Resilience Bond

The lessons learned from the Yuba I FRB provided an opportunity to implement creative solutions and build collaboration to address bottlenecks and advance landscape-scale forest restoration. An early Blue Forest partner, Yuba Water Agency, is also a member of the North Yuba Forest Partnership (NYFP) and was instrumental in scaling the Yuba I FRB into the Yuba II FRB, which launched in 2021.

“If it weren’t for the FRB and the development of the NYFP, we wouldn’t have catalyzed the level of funding and the scale of restoration needed to protect our watershed that we have today,” said Yuba Water Watershed Manager JoAnna Lessard.

Yuba Water is a critical community partner for scaling restoration efforts in the North Yuba River watershed. Providing resources to support on-the-ground project implementation is just one critical component to making ecological restoration happen now. Alongside their FRB support, Yuba Water has developed several other programs consistent with their mission, including the [Community Impact Grant and Loan Program](#), which has supported several additional projects in the Yuba Riverwatershed in the form of match funding for new forest health grants, planning grants to NYFP collaborators, the funding commitment for the Yuba II FRB, and new research funding—all of which demonstrate their deep commitment to the resilience and safety of regional ecosystems, water resources, and communities.



**JoAnna Lessard**  
Watershed Manager,  
Yuba Water Agency





### Yuba I FRB Enables Prescribed Fire in Final Field Season

For millennia, natural fire and cultural burning by Indigenous Peoples shaped the landscapes of the Sierra Nevada. However, by the mid-1800s settlers instituted fire suppression policies that resulted in overstocked forests facing a higher risk of environmental threats, including catastrophic fire. Prescribed fire is one tool managers can apply to help return these forests to a resilient state. "Using fire to maintain ecosystem resilience is more efficient and affordable than other restoration methods. These forests are adapted to fire, so we need to keep moving toward getting prescribed fire on the ground," said Rita Clipperton, District Prescribed Fire and Fuels Officer for the Tahoe National Forest.

In the North Yuba River watershed, the Yuba I and Yuba II FRBs support prescribed burning treatments to reduce fuel loads and promote ecosystem resilience. Before

the successful close-out of the Yuba I FRB in 2023, the Tahoe National Forest and partners conducted a 300-acre prescribed burn in a high-elevation portion of the project area. Partnerships established in the North Yuba Forest Partnership (NYFP) are also supporting accelerated restoration, including the use of more intentional fire, by helping facilitate information sharing, garner public support, and accelerate repayment timelines.

"Every step of the way, we are identifying bottlenecks and improving," Clipperton said about the partnership. "It's huge to work with contractors who know they will be paid immediately and with other community partners who can share different perspectives and interests."



**Rita Clipperton**  
District Prescribed Fire and Fuels Officer, Tahoe National Forest



Image Credit: USDA Forest Service Region 5



The successful closure of the Yuba I Forest Resilience Bond marks a significant milestone in environmental stewardship, with a spotlight on the commendable achievements of the North Yuba Forest Partnership. This accomplishment stands as a testament to the positive impact that strategic partnerships and focused restoration work can have on safeguarding our natural ecosystems."



**Carson Clark**  
California Program Forestry Supervisor;  
Tahoe Area, National Forest Foundation





# Asset Management



## Partnership with CSAA Insurance Group Expands Wildfire Resilience Investment Capacity

Accelerating the pace and scale of forest restoration across the Western U.S. requires a generational re-alignment of partners and resources. While the FRB provides critical up-front financing to enable project implementation, additional private sector investment can play an equally important role in supporting the growth of a balanced forest restoration value chain.

Blue Forest Asset Management (BFAM) is a core component of Blue Forest’s systems-level approach to forest restoration. The investment platform was founded in 2022 to expand and strengthen Blue Forest’s capacity to support the restoration economy with value-added capital and technical assistance.

In 2023, Blue Forest and CSAA Insurance Group announced the next step in their partnership by launching the [California Wildfire Innovation Fund \(CWIF; the Fund\)](#), the first financing vehicle managed by BFAM. The strategy provides flexible capital to companies and projects across the forest restoration, wood utilization, and wildfire mitigation sectors. By investing in critical workforce development, supply

chain resilience, and processing capacity expansion, the Fund seeks to improve project economics for land managers to bolster forest restoration, all while delivering compelling returns to CWIF investors.

Notably, the strategy is also designed to generate strategic value for insurance company investors by reducing wildfire risk across publicly-managed forests and the wildland-urban interface, where ignitions frequently start and spread to communities and infrastructure. The launch of CWIF in partnership with and anchored by CSAA Insurance Group is an important industry milestone. CWIF demonstrates how insurance companies can seek financial returns while investing directly in preventative risk reduction, and it validates Blue Forest’s commitment to using financial innovation to attract new investments to support restoration.

In 2023, CWIF invested in two initiatives, supporting biomass utilization in Tuolumne County and restoration goals across the broader Tahoe and Central Sierra region.



CSAA has worked with Blue Forest for many years as one of the early investors in the Forest Resilience Bond. We are excited to expand the partnership through our investment in the new California Wildfire Innovation Fund, which leverages Blue Forest’s expertise and relationships in sustainable forest management, but at a much larger and more meaningful scale. Climate-induced wildfire risk is not hypothetical; it has been devastating for people and property. The California Wildfire Innovation Fund reduces wildfire risk while generating positive social outcomes, productive economic benefits, and favorable financial returns, and we are confident that its success will attract additional investment to support these meaningful objectives.”



**Gretchen Tai**  
Vice President of Investments,  
CSAA Insurance Group





# Science



## Evaluating the Numerous Benefits of Forest Management is Foundational to Our Work

Science grounds our work. Our science team works to evaluate and monitor project benefits. We help develop, test, and deploy new tools and methods for measuring restoration project outcomes. We conduct research through academic and organizational partnerships to understand, evaluate, and communicate the benefits of ecosystem resilience. Research is fundamental to advancing the field of conservation finance and identifying new opportunities for Blue Forest to work on projects that have significant impact.

In 2023, a team of Blue Forest staff, science advisors, and partners published ["A multi-benefit framework for funding forest management in fire-prone ecosystems across the Western U.S."](#) which outlines a path to motivate financial contributions to forest management based on 11 community and ecosystem benefits of resilient forests. The framework provides an approach for (1) identifying the particular benefits of a forest

management project, (2) engaging beneficiaries, and (3) bringing multiple beneficiaries together to comprehensively fund a project—thereby increasing funding for forest management and increasing the pace and scale of implementation. This paper provides a framework for funding forest restoration projects through traditional and new stakeholders with a vested interest in project outcomes, and will be essential for helping to guide our engagement with stakeholders as we explore additional benefits of ecosystem restoration.

Four additional studies released in 2023 by the Blue Forest team and partners continued developing the field of conservation finance, exploring benefits such as public health, wood products, and water security. With science as our basis, we continue to grow our understanding of these many benefits and develop partnerships that facilitate new sources of funding for ecosystem resilience.



There are many benefits of resilient forests that can be leveraged for investment.

We are just beginning to tap into those benefits. For example, the impacts of wildfires on water systems and water bodies are often sidelined or overlooked. However, it's after the fires have been contained and the smoke has dissipated that this gradual and persistent challenge starts to surface. The good news is that there are actions that can be taken to both mitigate impact and increase the adaptive capacity of our water systems."



**Newsha Ajami**

Blue Forest Board Member and Chief Strategy and Development Officer for Research,  
Lawrence Berkeley National Lab





# Science Grounds our Work

Blue Forest published five papers in 2023.



## The human health benefits of improving forest health in California

Evaluates the human health and health sector impacts of wildfire smoke exposure, current evidence of the influence forest management may have on these impacts, and possible connections between the forest management and human health sectors.



## Building water resilience in the face of cascading wildfire risks

Reviews over 200 papers and reports about wildfire impacts on water supply systems to synthesize the current state of knowledge, identify research gaps, and suggest areas for future research.



## A multi-benefit framework for funding forest management in fire-driven ecosystems across the western U.S.

Identifies and provides a framework for leveraging the multiple benefits of forest restoration to motivate investment in restoration projects.



## Exploring interacting effects of forest restoration on wildfire risk, hydropower, and environmental flows

Explores the modeled impacts of forest restoration treatments in the [French Meadows Restoration Project](#) on downstream reservoir systems to empower more accurate estimates of the water benefits and value of forest restoration.



## Financial analysis of innovative wood products and carbon finance to support forest restoration in California

Examines the financial viability of products made with low-value biomass, such as biopower, transportation fuels, and biochar. If profitable, these products create a demand for low-value biomass, facilitate its removal from forests, and provide an additional funding source for restoration projects.

[The human health benefits of improving forest health in California: investigating the links between forest management, wildfire smoke, and the health sector](#) spurred on an [expert briefing](#), exploring opportunities to build more robust connections between forest management and public health. The report also informed [legislation](#) introduced by California State Senator Marie Alvarado-Gil to allow state agencies to track and monitor air pollution, population exposure, and cases of adverse health outcomes due to wildfire smoke.

[Financial analysis of innovative wood products and carbon finance to support forest restoration in California](#) helped develop the Blue Forest biomass utilization thesis, highlighted the potential for investment in the biomass utilization industry, and was fundamental to the formation of the California Wildfire Innovation Fund (CWIF).





# Acknowledgments





## Acknowledgments

Blue Forest is a conservation finance non-profit focused on advancing forest restoration through scientific research, financial innovation, and collaborative partnerships. Since 2018, Blue Forest has managed investor capital through its flagship financial product, the Forest Resilience Bond (FRB), which deploys private capital to finance forest restoration projects on private and public lands to reduce the risk of catastrophic wildfire.

### To learn more about Blue Forest:

Visit our [webpage](#) or check out this [video](#) explaining the FRB.

For comments, questions, or suggestions on the 2023 Impact Report, send us a note at [connect@blueforest.org](mailto:connect@blueforest.org).

The Blue Forest Team would like to thank the following individuals for their support and collaboration in working with us to develop this impact report.

**Helena Murray**, Region 5, USDA Forest Service

**Maria Kozloski**, The Rockefeller Foundation

**Marko Bey**, Lomakatsi Restoration Project

**Rita Clipperton**, Tahoe National Forest, USDA Forest Service

**Carson Clark**, National Forest Foundation

**JoAnna Lessard**, Yuba Water Agency

**Gretchen Tai**, CSAA Insurance Group

**Newsha Ajami**, Lawrence Berkeley National Lab

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