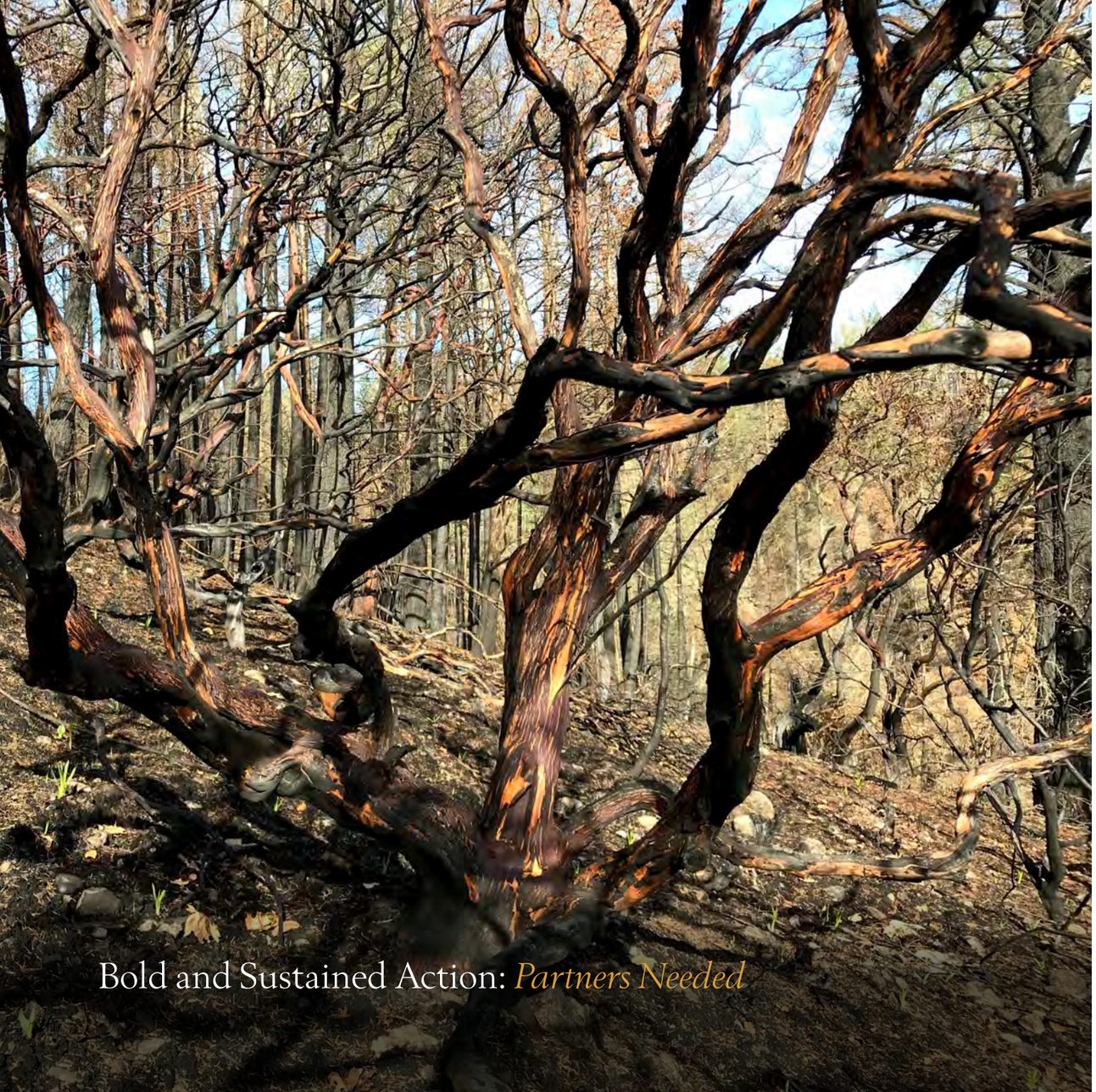
Pepperwood
Science Solutions for Resilience
STRATEGIC PLAN 2020-2025

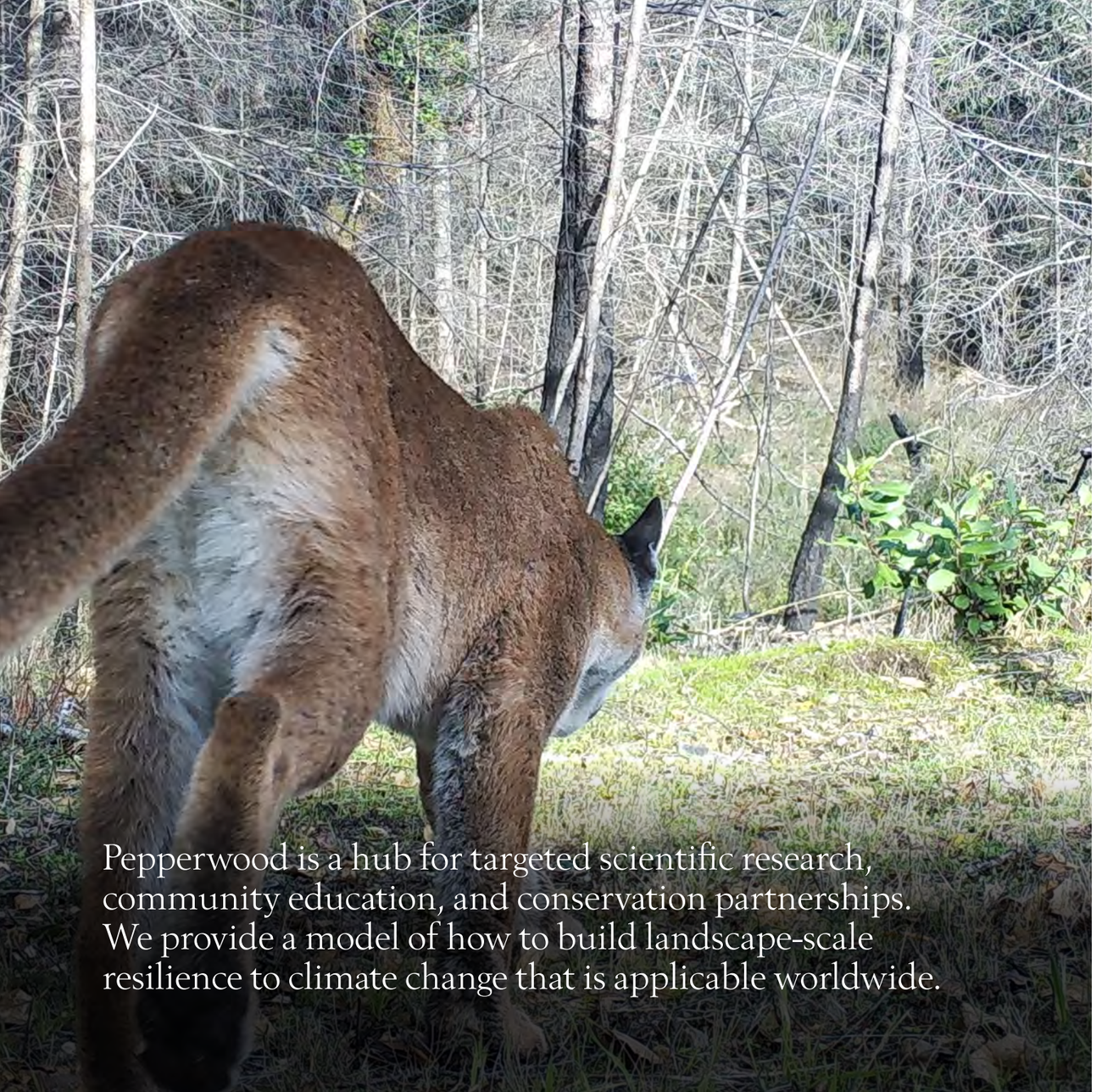


Bold and Sustained Action: *Partners Needed*

Pepperwood seeks partners who care about the health of our community and our land, water, and wildlife to join us in a shared mission to create a resilient planet. Our success will be contingent on securing critical financial and human resources from those who embrace the urgency of our current climate challenge. And it will require bold and sustained action.

Please join us in supporting Pepperwood's breakthrough five-year strategy to drive the science-based solutions needed to steward the natural assets we all rely on for our wellbeing.

Lisa Micheli, PhD, *President and CEO from 2009-2024 & Sentinel Society Member*



Pepperwood is a hub for targeted scientific research, community education, and conservation partnerships. We provide a model of how to build landscape-scale resilience to climate change that is applicable worldwide.

At Pepperwood, we connect tens of thousands of California residents annually to nature and nature-based climate solutions via programming conducted on our 3,200-acre reserve and beyond. Our calling is to bring scientists and community together to ensure that our cherished life and landscapes continue to thrive for generations to come.

We use our reserve as a living laboratory to:

- Engage researchers and decision-makers in measuring and mapping the processes driving ecosystem change
- Serve as a Sentinel Site for climate change through the application of cutting-edge environmental sensor technology
- Develop science-based solutions to reduce wildfire hazards, manage floods and droughts, promote regenerative agriculture, and prevent the extinction of our precious wildlife
- Mobilize a network of partners to implement strategies that promote human well-being, environmental health, water security, and biodiversity
- Empower the next generation through education to become more inclusive and effective conservation leaders
- Ensure we maximize the return on investment of the limited financial resources available for conservation
- Convene and partner with global experts to inform and amplify our work.

To mobilize a wave of conservation action over the next five years, we will leverage world-class scientific expertise, 21st century technology, and indigenous knowledge.

Our Unique Assets

Pepperwood's leadership in ecosystem monitoring, applied interdisciplinary research, nature-based science education, and collaborative conservation action is grounded in our unique assets.

Unrivaled Location and Facilities

Located in the heart of Northern California's Sonoma County – a globally-recognized biodiversity "hotspot" – Pepperwood provides an important refuge for more than 900 species of plants and wildlife and serves as a living laboratory and conservation think tank for researchers and educators from around the world.

Over the next five years, Pepperwood will replace three structures lost in the fires of 2017 with new green and fire-resilient facilities; establish a new telecommunications network for data integration and dissemination; maximize use of renewable energy; and build a new outdoor nature observatory for those with physical limitations.

Our Sentinel Site

By combining sensor technology with targeted biological surveys throughout our reserve, we systematically monitor weather, water, fire impact, and the diversity and vitality of local plant and animal populations. Our real-time data streams provide critical situational awareness to government agencies and community leaders crafting best practices for emergency response and long-term resilience.

Over the next five years, we will build on this empirical foundation to evaluate long-term trends and processes, serve as a test-bed for new sensor technologies, and advance real-time hazard forecast and warning systems for our region and beyond.

Interdisciplinary Research and Institutional Partnerships

Pepperwood fosters relationships with the best and brightest applied scientists drawn from academia and public research centers. We facilitate interdisciplinary collectives to build bridges between basic and applied research. We maintain long-standing partnerships that include the National Science Foundation, the University of California, California Academy of Sciences, Sonoma State University, Santa Rosa Junior College, the U.S. Geological Survey, NASA and the inter-agency California Ecosystems Study Unit.

Demand for our expertise co-creating climate solutions with business leaders, government agencies, and private organizations continues to grow. From Monterey to Mendocino, over the next five years we will expand our role serving public and private partners with customized data products to meet their most urgent needs.

Inquiry-Based Science Education

Our dynamic education team is comprised of leaders in inclusive inquiry-based science learning. We engage elementary through adult learners in experiential outdoor science education and conservation action. We take pride in promoting an evidence-based approach to curriculum development and implementation.

Over the next five years, we will continue to share bilingual Spanish-English science curricula with academic partners, deliver more than 40 offerings to the community each year, and directly serve nearly 1,000 elementary school students and 500 youth annually, while growing our roster of science-based landowner and technical workshops.

Living with Wildfire

Pepperwood had been actively educating agencies and the public about the impact of climate on fire probability when the 2017 Tubbs Fire burned the entire reserve and destroyed six mission-critical facilities. When fires returned in 2019, the Kincade Fire burned just 60 percent of our lands, thanks to climate-smart land management practices, our new fire camera network, and close coordination with first responders.

Over the next five years, we will unite field data with remote-sensing (airborne and satellite) data products to improve hazard mapping and demonstrate effective forest treatment planning and implementation with CALFIRE and other agencies.

Indigenous Leadership

Pepperwood's Native Advisory Council is dedicated to caring for the land by bridging cultural knowledge. Our Council provides critical input into all aspects of Pepperwood's operations, from land management to community education, and helps to guide our prescribed burning and Black Oak restoration programs.

L TO R: LUCY MCKAY, CLINT MCKAY, BEN BENSON, TEKTEK, L. FRANK MANRIQUEZ, BRENDA FLYSWITHHAWKS

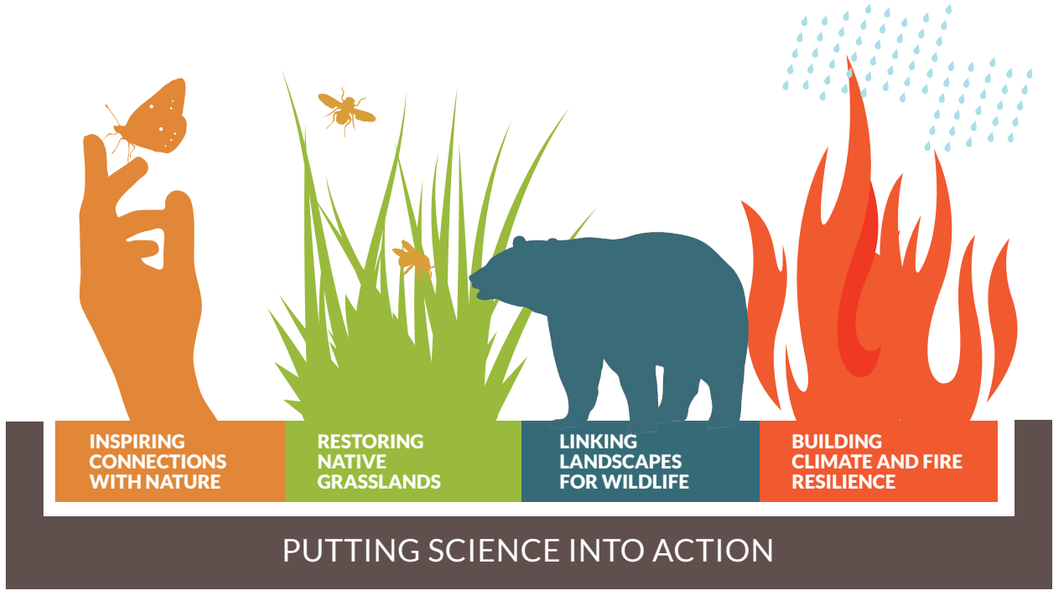
Indigenous perspectives are now needed more than ever to complement science-based approaches to resilience. Over the next five years, we will expand indigenous leadership within our organization, grow opportunities for indigenous youth and families to participate in programming, and support the expansion of the Council's capacity to engage in statewide, national, and global indigenous networks.

Building from our Core: *Our Five-Year Initiatives*

At the heart of Pepperwood's 2020-25 strategic plan are four cross-program initiatives that build on our foundations in research, education, and conservation action to address pressing needs for Northern California's resilience.

Why These Initiatives?
Pepperwood has chosen to focus on these four cross-program initiatives because they

- address issues critical to our region's and the planet's ecosystem health
- build on Pepperwood's core competencies – research, education, land stewardship, and alliance-building
- generate both scholarly and practical tools to drive science-based solutions for regenerating wild and working lands



Inspiring Connections with Nature

AIM: Connect people to nature and inspire a lifelong conservation ethic through exploration, observation, science, and artistic expression.

We will do this by expanding opportunities for all members of our community to explore, observe, and express their appreciation for nature through hands-on science and art experiences.

PRESSING NEED	KEY ACTIVITIES	OUTCOMES
The amount of time both kids and adults spend outside is alarmingly low — only minutes per day. Yet research shows more time spent in nature leads to improved emotional well being, a healthier lifestyle, and a deeper commitment to conserve natural landscapes.	Expand bilingual (Spanish-English) science programming for families and elementary through secondary school students and increase outreach to traditionally marginalized communities.	Performing and visual artists bring new voices and perspectives to our exploration of the natural world, helping our community forge deeper connections with nature.
A diversity of voices is needed to create successful conservation strategies, yet people of color are not well represented in conservation leadership.	Sponsor career-building internships for college students.	The next generation of conservation practitioners and champions are representative of our region's diverse demographics.
	Deliver nature-based experiences and retreats to the community.	An increasing number of our region's youth and adults engage with the outdoors, live more sustainably, and champion nature.
	Forge partnerships with artists and arts organizations, including filmmakers and performing artists, to expand audience engagement with the land.	

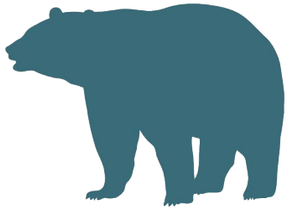
Restoring Native Grasslands

AIM: Develop, implement, and disseminate best management techniques to regenerate healthy grasslands.

We will do this by refining methods to increase plant biodiversity, native plant cover, and soil health on our 900 acres of grasslands and by sharing these regenerative practices via agricultural partnerships and educational outreach.

PRESSING NEED	KEY ACTIVITIES	OUTCOMES
Grasslands are critical to carbon sequestration, pollination, soil formation and retention, nutrient cycling, water supply and flood control.	Demonstrate science-based adaptive management of our 900 acres of grassland using conservation grazing and prescribed burning practices.	Expand the acreage of healthy grasslands statewide and improve habitat for wildlife and pollinators.
Grasslands provide critical habitat for 90 percent of California's rare or endangered species.	Expand ecological monitoring of grasslands, including soil carbon measurements, to support California's greenhouse gas reduction targets.	Reduce hazardous wildfire fuels and improve strategic access in partnership with first responders.
Eighty-eight percent of California's grasslands are privately owned and just four percent are protected in reserves. And yet, native grasslands are one of the most endangered ecosystems in California, with 47,000 acres of habitat per year converted to other uses.	Host and attend gatherings of scientists, land managers, cattle producers, tribes, and agencies to share innovative techniques and best practices and expand public education activities.	Increase soil health, including carbon and water storage, at Pepperwood and beyond.
		Grow public appreciation and support for active protection and restoration of grasslands.

Linking Landscapes for Wildlife



AIM: Increase the pace and scale of conservation actions that sustain or improve habitat quality and connectivity for wildlife.

We will expand our leadership role in building networks of people protecting landscape connectivity and wildlife. We will serve as a go-to source for accurate data on wildlife populations and expertise on habitat corridor protection and stewardship.

PRESSING NEED	KEY ACTIVITIES	OUTCOMES
Natural areas in the West have been lost to development at the rate of one football field every two minutes.	Work with communities to understand the importance of expanding and improving habitat corridors from California's Coast Ranges to the Pacific.	We reverse habitat loss trends to enable all wildlife to move freely throughout their natural ranges.
More than 300 animal species in California are at or near the brink of extinction due to inadequate habitat protection. But habitat loss in Sonoma County has accrued 20% faster than in other California counties and 80% faster than elsewhere in the US.	Map habitat changes and extend our wildlife camera network to monitor trends in wildlife diversity, behavior, abundance, and movement.	California's threatened and endangered wildlife populations stabilize or increase.
There are currently no standardized monitoring systems for wildlife health across California.	Train and convene landowners and residents to develop and implement wildlife-friendly practices.	A critical mass of landowners and managers commit to wildlife-friendly practices.
	Share models for regeneration of healthy wildlife corridors that integrate watershed protection and fire resilience among regional, national, and global partners.	High-resolution wildlife data informs statewide decision-making.

Building Climate and Fire Resilience

AIM: Increase our community's resilience to climate and fire hazards by enhancing the health of our watersheds and ecosystems.

We will leverage our Sentinel Site to measure, map, and model real-time climate variability and related impacts. We will utilize the reserve to evaluate and advance adaptation practices for drought, flood and wildfire. We will grow our role leading strategic collaborations to build water security and climate resilience.

PRESSING NEED	KEY ACTIVITIES	OUTCOMES
Recent warming trends just shy of two degrees Fahrenheit has already contributed to extreme events, including heat waves, drought, wildfire, flooding, and rising tides.	Host the Terrestrial Biodiversity Climate Change Collaborative (TBC3.org) in partnership with University of California's Rausser College of Natural Resources.	Increase the capacity of communities to take preventive action to save lives, avoid property damage, and limit liabilities.
Under business-as-usual conditions, warming is projected to triple by the end of this century, which will in turn create far more arid and fire-prone conditions in Northern California.	Work with public and private land and water managers to co-produce and interpret high-resolution climate, hydrology, forest and fire data, to support next-generation real-time hazard warning systems.	Ensure we have enough high-quality water available to meet the needs of both our environment and our community.
We need to take action now to leverage nature-based solutions that protect communities by building resilience and reducing greenhouse gas emissions.	Inform regional water security and fire resilience strategies and serve as a demonstration site for post-fire watershed and ecosystem restoration and wildfire preparedness.	Validate and demonstrate nature-based solutions for climate and fire resilience.
		Model a reproducible regional framework for climate and fire resilience for Mediterranean-type ecosystems worldwide.

Maximizing Your Investment

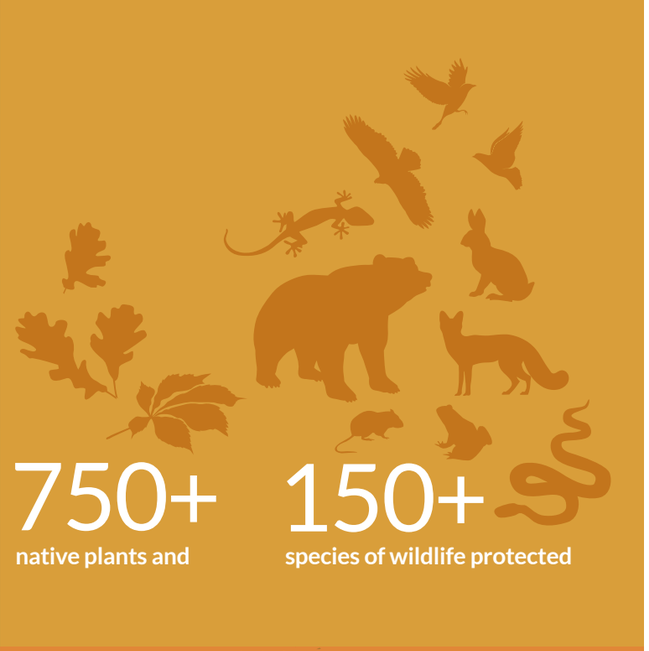
To support the people, programs, and infrastructure needed to fulfill Pepperwood's five-year vision, we will need to grow revenue at a steady rate of approximately five percent per year. This growth will depend upon philanthropic support from aligned foundations and individuals, and when appropriate, fee-for-service engagements with collaborating public and private agencies.

Specific investment opportunities include the following:

- Support or endow student scholarships, an elementary classroom, a teacher training, or our conservation internship program for diverse college students
- Endow our climate-monitoring program, fund a year of biological data collection, or sponsor a sensor
- Adopt an acre of habitat or a wildlife corridor for monitoring and conservation
- Sponsor a fellowship for a post-doctoral researcher
- Support or endow any of our four cross-program initiatives around nature inspiration, grasslands, wildlife, or climate resilience
- Fund new green facility upgrades, including a green energy network or rainwater capture system
- Sponsor an accessible outdoor nature lab for students and visitors with disabilities
- Protect our infrastructure long-term through a facilities or equipment endowment

We invite you to join us by taking action when it matters most.
To make a gift or for additional information, please contact **advancement@pepperwoodpreserve.org** or call Dr. Lisa Micheli, President and CEO, at **707-591-9310**.

3,200
acres of "forever wild" protected habitat



750+
native plants and

150+
species of wildlife protected

320
data streams measuring nature's pulse via our Sentinel Site

9,400
square-feet in the Dwight Center for Conservation Science, an LEED-certified ecology institute

7,000+
trees tagged and monitored as climate indicators

About Pepperwood

At Pepperwood, our mission is to inspire conservation through science. We believe that our well being depends on the health of our natural world. Every day our team studies California's land, water, and wildlife so we can educate decision-makers, our community, and the next generation about how best to care for the Earth. With guidance grounded in science, we can all take action to sustain the planet that sustains us.

In just ten years, Pepperwood has established itself as a leader in crafting solutions for resilience in Northern California's wild and working lands. Our 3,200-acre reserve and the Dwight Center for Conservation Science serve as a natural laboratory for researchers from around the world, a center for ecological education, and a conservation think tank. Serving tens of thousands of California residents annually, Pepperwood's operations are supported through individual gifts, foundation and government grants, and fee-for-service revenue. Our calling is to bring scientists and community together to ensure that human life and our natural world continue to thrive together for generations to come.

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Pepperwood Timeline

1978 – The Kenneth Bechtel family bequeaths 3,200 acres to the California Academy of Sciences

1979-2004 Property owned and managed by the California Academy of Sciences

2004 – Herb and Jane Dwight establish the non-profit Pepperwood Foundation to steward the property in partnership with Cal Academy

2007 – Memorandum of Understanding for collaborative educational programming established with Santa Rosa Junior College

2009 – Dwight Center for Conservation Science opened, providing classrooms, research labs, a library, and meeting spaces

2010 – Terrestrial Biodiversity Climate Change Collaborative (TBC3) launched with Gordon and Betty Moore Foundation support

2016 – Pepperwood becomes an independent 501(c)3 nonprofit organization

2019 – Five-year Research Plan submitted to the National Science Foundation

2020 – Five-year Strategic Plan, Science Solutions for Resilience, released

Pepperwood

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PEPPERWOOD FOUNDATION

Our Vision

A future where people understand, value, and actively protect the diversity of life on earth and the natural systems upon which all life depends for the benefit of current and future generations.