Mountain Echo

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A Quarter Mile of Creek and Survival of a Species

How can a quarter mile of a creek make a difference for both a watershed and the survival of a species?

In the early 1900s, Mill Creek was dammed to support a small mining camp nestled in the Santa Cruz Mountains. The dam was poorly sited and never worked as intended, so a new dam was installed a quarter-mile upstream, which now serves as the backup water supply for Davenport.

Unfortunately, the Mill Creek dam trapped the cobble and pebbles that feed sediment beds critical for spawning Coho salmon. Located at the southern end of their expansive, but imperiled habitat range, Mill Creek became an ineffective spawning location and has stayed that way for more than a century. Mill Creek and the San Vicente Creek watershed is an exceptional regional creek system. Its underground karst system of limestone drainage, sinkholes, and caves feeds the creek a steady flow of water, giving it one of the heaviest flows in the region, even in years of drought. And the confluence of San Vicente with the Pacific Ocean has no lagoon, making its upper reaches accessible all year round—a rare and desirable trait for fish species.

Over the past 10 years—since Sempervirens Fund and partners Peninsula Open Space Trust, Save the Redwoods League, and Land Trust of Santa Cruz County purchased San Vicente Redwoods for permanent protection—watershed restoration has been a high priority. Downstream conditions have been strategically improved in anticipation that the dam might one day come down.



Recovering from Fire and Reimagining Big Basin

In the year since the CZU fires, your critical support for Big Basin and redwood forests ensured a quick and impactful response to restore forest health. Before the fire was under control, response efforts began at Big Basin and beyond, thanks to you.

A staggering 99% of the lands we manage burned, but stewardship efforts are restoring forests and will help protect nearby communities. Caring for the land prepares forests for the inevitable return of fire—blending the latest science with the best practices of the past to improve forest management. In the past year, you have funded efforts to:

- Remove debris and hazardous trees and replace culverts at Jamison Creek, San Vicente Redwoods, and Big Basin, helping restore and maintain natural systems.
- Plant trees at San Vicente to help grow tomorrow's forests.

- Strategically establish shaded fuel breaks to reduce fire risk and reset understory health.
- Improve fire roads and install water tanks, at San Vicente and Big Basin, reinforcing the infrastructure needed should fire strike again.
- Plan for prescribed burning to reduce dry brush.
- Replace melted wildlife monitoring cameras and acoustic recording units to help detect key species like murrelets and pumas that indicate a healthy habitat.

As we restore forests across the region, California State Parks has also invited you to help reimagine Big Basin. We know with your continued support the future of Big Basin can honor its past and be built to last for what lies ahead. Learn more about your impact and get involved:

sempervirens.org/czu-anniversary

continued

Among many important outcomes, removing the dam would release the trapped sediment that will improve the spawning conditions not just in Mill Creek, but throughout the creek system. Thirteen large, wood structures, installed in and among the creek beds at key locations, will generate sandbars with the released cobble, giving salmonids ample spawning habitat for the first time in a century. The watershed includes floodplains, which have been carefully rid of invasive clematis. Together, the ecosystem will thrive, benefiting from the increased flow of creek water from above (and below), improving watershed health.

Thanks to your support, removing the Mill Creek Dam, and restoring this watershed, will have benefits that will outlast us all and bring ecological

It's Impossible to See the Redwoods and Not Be Impressed



Judith and Fred Butts are Bay Area natives and long-time supporters of Sempervirens Fund, having fallen in love with redwoods many years ago.

"It's such a humbling experience to be in their presence. I can only imagine what it must have been like to encounter old-growth redwoods before logging," says Fred. "As an artist, I'm completely prosperity to future generations of species and the habitats they call home.

Learn more about removing Mill Creek Dam: **sempervirens.org/mill-creek-dam**



mesmerized by the redwood forest. The trees are so large that every color of my palette is necessary to paint just one. The whites, yellows, and oranges are all represented in the bright sunlight sections of the trees. And complementary blues, purples, and black are required for the portion of the trees in shadow. Add in the red tree and green leaves and you have the whole color wheel."

"Given the chaos and stress in our world today, we all need a special place to enjoy an escape. Fred and I find this when hiking on trails through redwood forests. The quietude provides us with an inner peace and gratitude for all the hard work that others before us have undertaken to preserve Bay Area redwoods," adds Judith. "With rapidly worsening climate change, redwoods maintain a stable, human-friendly climate, and capture carbon dioxide. Protecting our local redwood forests stabilizes the global climate.

"We donate monthly as a firm commitment to Sempervirens Fund because we want to help maintain and rebuild a healthy redwood forest for wildlife and countless generations to come," says Judith. You can join Judith and Fred in supporting the protection of redwoods: sempervirens.org/donate



On Nature's Timeline

The CZU fire transformed Big Basin Redwoods State Park in hours and 86,500 acres in weeks. Its effects will linger for centuries. The forest is expected to rebound, but when? How long until the forest looks like the place we knew?

To find out, writer Julia Busiek reached out to redwood ecologist Zane Moore and Joanne Kerbavaz, an environmental scientist with California State Parks. "Thinking of those charred trunks," Busiek writes, "the first thing I wanted to know was: how long until Big Basin's redwoods are, well, red again?"

"As the tree grows, those black parts will get sloughed off," Moore said. In 20 years, the trunks will be about half red again. In 40 years, just a few scarred furrows will remain. "Anytime you're in an old-growth stand, you'll see scars from past fires."

Thousand-year-old trees are rare enough that each one felled by fire can seem like an unbearable loss. So it was heartening for Busiek to speak with Kerbavaz. "We expect 90% of the redwoods to survive," she said right off the bat. "When you look at how much damage the old-growth trees already had, and they're still standing after a thousand or two thousand years," she says. "Last year's fires were, for most of them, another round of what they experienced before, rather than be something that's more than they can withstand."

Read more about the timeline for redwoods to recover from fire: sempervirens.org/natures-timeline



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Caring for Sequoia Sempervirens

Eight Ways Science Protects Redwoods

At Sempervirens Fund, we take great joy in spending time among the redwoods throughout the Santa Cruz Mountains. And we take our roles in conservation and stewardship very seriously. Science has always guided our work, helping us determine the best lands to protect, restore, and steward in our care.

What's at stake?

About two-thirds of the region's redwood forests are already protected. But, 610 square miles, or 390,000 acres, of priority forest land are still vulnerable to subdivisions and development. This endangers all the animals and people who depend on the forest. A vast Sequoia sempervirens forest thrived here for at least 20 million years, and with your help we can protect what remains and support people and wildlife for generations to come.

Of the thousands of acres of old-growth redwood forests in the Santa Cruz Mountains, most of what is unprotected can be found in small, fragmented patches across the region. These are Sempervirens Fund's highest priority for protection. Read on to learn about eight ways science helps us protect redwoods. Whether it's fire ecology, invasive plant study, or geomorphology, they all help us protect redwoods in more ways than one. In fact, our team of experts looks at eight primary fields of science to determine what land to protect and restore, and how best to steward the redwoods in our care.

Conservation science helps us prioritize land conservation of coast redwood forests based on detailed data, mapping, and conservation values within the Santa Cruz Mountains bioregion.

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Conservation biology helps ensure the last 5% of old-growth coast redwoods are protected and helps us understand how plants and wildlife are thriving or are impacted, mostly by us humans.

3

Geomorphology helps us figure out how to get rid of roads we don't need, maintain roads we want to keep, and build other infrastructure, like culverts, to support natural systems, or give us access to important natural features.

4

Restoration ecology helps restore native plant populations, which help ecosystems renew and support local wildlife.

Hydrogeology helps improve waterway conditions, improve habitats, and contribute to the climatic cycle of water in regional habitats that support a diverse array of life, including redwoods.

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Hazmatology helps us remove debris, reset natural states for habitats, and ensure safer and healthier conditions for forests to thrive.

Fire ecology guides the strategic placement of features such as shaded fuel breaks to clear out understory fuels. This reduces fuel loads, helping wildfire diminish in intensity, keeping fire out of canopies, and protecting nearby communities.

8

Invasive plant science informs our removal of invasives such as clematis and French broom, which love redwood forests. This allows native plants to flourish, reduces fire fuels, and increases plant diversity.

Without science, the habitats, waterways, and resiliency of the Santa Cruz Mountain region are at risk. Science can and will help protect the planet and redwoods. Learn more about the fields of science that help protect the redwood forests: sempervirens.org/eight-sciences

