



OVERZEALOUS LOGGING HAS REDUCED OLD GROWTH COAST REDWOOD FORESTS TO JUST FIVE PERCENT OF THEIR ORIGINAL TERRITORY, ENDANGERING THE WILDLIFE THAT DEPENDS ON THEM FOR FOOD AND SHELTER. HOWEVER, THE AUTHOR IS HOPEFUL THAT NEW FOREST RESTORATION TECHNIQUES CAN RECREATE LOST HABITAT AND HELP RARE SPECIES THRIVE ONCE AGAIN.

THE WORLD ABOVE US

ON ONE OF THE LONGEST summer days of this year, I hiked into a small coast redwood forest by the ocean in search of a redwood I hadn't climbed for years. I'd spent many days among the branches of this particular tree while studying how redwood leaves grow, and it was time to give this tree a checkup. When I found it, branches overhead obscured my view and I couldn't see the treetop above me from where I stood among the ferns. There was only one way to fix that. I clipped my ascenders onto the climbing rope dangling before me and began to slowly make my way upwards through the forest. As I inch-wormed my way skyward using a squat-like motion, the lowest branches slowly came within reach and I entered the canopy.

For every canopy biologist, there is a moment of transition when the forest floor suddenly becomes distant and you realize that you're in a place typically reserved for birds and other animals that aren't afraid of heights. But feeling comfortable a few

hundred feet off the ground in a redwood is possible for humans too. The higher I climbed, the more I relaxed as branches layered solidly below me. Any fear of falling dissipated as the treetop came into focus, revealing a captivating view of life there. Everywhere I looked, I saw powerfully built branches stretching in all directions, creating an extensive platform for countless species clinging to their red, papery bark.

The discovery of redwood epiphytes — species that live exclusively up in the canopy on top of tree branches — profoundly changed our understanding of redwood forests. Not only are coast redwoods the tallest trees in the world, reaching heights of more than 370 feet, each big old redwood is an ecosystem in itself. As redwoods grow and mature over centuries and millennia (they can live for more than 2,000 years), their branches become broad platforms for lichen, moss, ferns, shrubs, other trees, and a multitude of animals that inhabit the canopy.

In the wettest coast redwood forests of

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PHOTOGRAPHS BY DAVID MARTINEZ





2,000,000
Acres of coast redwoods before commercial logging began in the 1850s

120,000
Acres of old-growth coast redwood forest today*

Northern California, lush canopy mats of leather leaf fern anchor a diverse epiphytic community. Perennially green, the rhizome and roots of leather leaf fern create fibrous sponges that hold water and trap soil in the tree crown hundreds of feet in air. Like a raised-bed garden, these fern mats help accidental epiphytes take root when birds drop seeds into the canopy from plants that otherwise reside on the forest floor. Among this vibrant flora, cryptic mammals like flying squirrels den aloft and endangered birds like the northern spotted owl and marbled murrelet come to rear their chicks. Rare wandering salamanders spend their entire lives in this hidden world far above our heads.

I studied the layered bark covered with lichen as I climbed and was struck by how close we came to losing remarkable canopy communities like the one I was in. Over the last century and a half, extensive logging efforts harvested 95% of the coast redwood forest in California. I shuddered thinking about a giant tree like the one I was perched in falling to the ground for timber, displacing all of its inhabitants.

In the early days of timber harvesting in California, it must have seemed like there was an endless supply of enormous trees along the coast — two million acres. Today, the remaining 120,000 acres of ancient forest are scattered as old-growth islands surrounded by vast stretches of young forest. On the one hand, this sobering statistic is disheartening because we have relatively few ancient forests and remarkable old trees left. On the other hand, there is tremendous potential to grow the young forest back, and this opportunity is ripe for cutting-edge restoration techniques.

I can imagine today's small trees becoming the next generation of giants and welcoming epiphytes into their towering crowns. With patience on our part and diligent land stewardship, many redwood groves will naturally grow back and eventually resemble the old-forest habitat needed by most epiphytes. In places where ancient forest species are so rare and at risk that we literally can't afford to just wait for the trees to grow, we can be more proactive. We can accelerate the growth of young redwoods by lessening

tree competition in overcrowded stands using restoration forestry. We can build shelter and nesting platforms in maturing forests to provide additional habitat for canopy species to colonize decades and even centuries sooner. Restoration techniques like these are already being tested and studied by researchers, offering hope that we can grow our forests back for all the species that call the redwoods home, including us.

From my high redwood perch, I saw both old and young redwoods swaying gently in the forest of green around me. Only a handful of trees in this grove, like all groves, had ever been climbed and no doubt this canopy was home to epiphytic species yet to be discovered. I took photos of the lichens closest to me and grabbed a sample of beetle feces I spied on a branch to send to the University of California, Berkeley, for identification. Had I found a new species? It seemed unlikely, but peering hopefully at the cracked bark for signs of life among the redwood's millions of leaves kept a smile on my face all day. **WH**
To learn more about redwoods conservation, visit www.savetheredwoods.org.

* Source: Save the Redwoods League