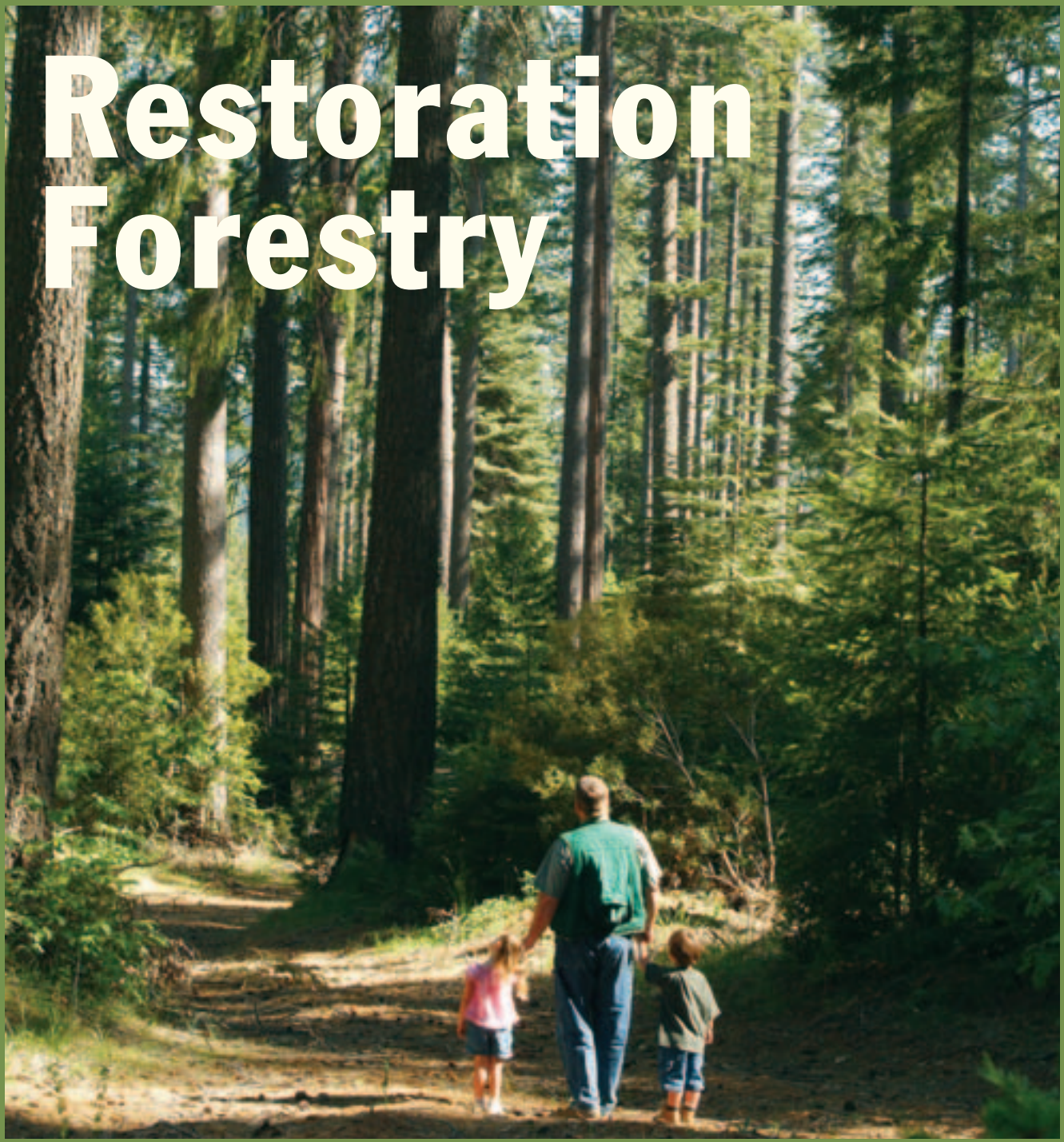
Restoration Forestry



Why We Must Restore Forests

Forests are among the most beautiful and renewable natural resources with which we have been entrusted. We have a moral obligation to make wise use of those resources and ensure that forests stand tall for future generations to use and enjoy.

Managing forests helps ensure they stand tall for generations and meet the needs of a growing population.

People expect a great many values from their forests, from recreation and spectacular vistas to clean water and air. Forests can also help reduce greenhouse gas emissions. And though few make the connection between forests and the 2x4s they buy at the hardware store, wood remains the most environmentally friendly available building material on the planet – non-renewable resources like steel and concrete require far more energy to produce and release greenhouse gases into the atmosphere.

The environmental disconnect

Modern conveniences tend to sever our ties to the land that feeds and shelters us. They distance us from how natural resources become homes, dinner tables and things we use every day.

More than 90 percent of Californians now live in urban or suburban environments where highways and mass transit are the norm, not complex ecosystems. That disconnect can do great harm. Not only to California's forests and families whose livelihoods depend on working the land, but also beyond our borders where trees are being harvested aggressively to meet the wood demand Californians create.

California has drastically reduced harvesting in the state, but Californians continue to consume wood at literally world-record levels. As a result, California now imports about 75 percent of the wood used in the state from places where Californians have no say on environmental practices.

While California transfers environmental responsibility for its wood consumption beyond state borders, less than one-third of new growth in California's forests is harvested. New growth, in fact, has exceeded harvest in California for decades – a report for the USDA Forest Service Pacific Northwest Research Station found that growth exceeds harvest on California's national forests by a ratio of almost six to one; thus the overcrowded conditions that now plague our government-owned forests and fuel the wildfire crisis.

Logs being off-loaded in Humboldt Bay. California, a state with more than 30 million acres of forest, now imports about 75 percent of the wood it consumes, according to CDF-FRAP.

As California grows – the state's population is forecast by the U.S. Census Bureau to reach 46.4 million by 2030 – more and more demands will be placed on California's forests. New Californians

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will expect abundant clean water and ample recreation opportunities that current Californians have. They will want to build homes for their families too.

Fortunately, California is recognized as a world leader in sustainable forestry, with some of the best education institutions and technology anywhere.

California-grown wood is cultivated and harvested in accordance with the highest environmental standards in the world. When private forestland in California is managed, it is managed sustainably.

Productive forests, safer forests

Better yet, the same management practices that can provide wood products and recreation opportunities can also reduce the threat of catastrophic wildfire. By reducing excess fuels and creating growing conditions that encourage naturally open forests to return to California's landscape, the monster fires that now strike with shocking regularity can once again become rare occurrences.

California's history has been built on wood – from railroad trestles to the rise of mining towns and the rebuilding of San Francisco after the 1906 earthquake. Wood from the state's productive forests has helped make California what it is. The state's climate and rich soils are perfect for growing trees. Today, harvesting trees in accordance with laws that require long-term sustainability plans can deliver myriad forest values and ensure the survival of both forests and the wildlife that calls forests home.

Wood helped build California. Wood is the only entirely renewable, recyclable and biodegradable resource we have. Sustainable forestry can provide wood and diverse forested landscapes.

In fact, many threatened and endangered species that concern us today could recover more quickly if provided the variety of habitats that existed historically. Diverse wildlife, wood, recreation, safe communities, clean water and air are all among the comprehensive benefits of restoration forestry. ■

There is ample evidence that indicates recent declines in forest management have had undesirable consequences for forest health and wildlife. Yet public attitudes continue to be driven toward total preservation.

Leaving forests alone is not a sustainable approach to managing natural resources. People are dying in high-intensity wildfires, biodiversity is suffering, and the situation is getting worse as an increasing population puts more demands on forests. "Leave it alone" is a simplistic ideology that ignores the fact that native people helped create natural forests. Nor does it acknowledge that through inaction, people are creating dense forest conditions and fueling massive insect infestations and catastrophic wildfires.

Restoration forestry, on the other hand, is a real-world solution for addressing the forest health and wildfire crisis California is facing. It is a practical rather than ideological course of action that uses history as a guide and science as its tool to address the problem.

Restoration forestry is a comprehensive plan that could:

- Restore natural forest conditions to California's landscape
- Reduce the threat of catastrophic wildfire
- Enhance biodiversity
- Protect water and air quality
- Pay for itself
- Encourage use of renewable resources
- Save taxpayers millions of dollars

Learning from history

Restoring forests must start with the understanding that California's forests today stand in sharp contrast to historic forests that were more open because of lightning and native American-ignited fire. There is overwhelming evidence that by suppressing fires for more than

Today's forests stand in sharp contrast to historic forests that were more open because of lightning and native American-ignited fire.

This photo shows the upper Yosemite Valley in 1899 with meadows occupying much of the valley floor.

This photo shows the same location in 1994 crowded with dense conifers and woody plants.

100 years and curtailing tree harvesting for decades, forests have become increasingly overcrowded.

Restoration forestry aims to restore ecologically and economically sustainable native forests that resemble historic forests. Fortunately, a great deal is known about California's forests before European settlement. We know, for instance, that those forests featured small patches of trees about the same age and size. We also know that patches moved through a cycle of development, from young to old, and the relative proportions of each type of patch that appeared on the landscape. In many mixed-conifer forests, for example, patches of old trees with a thick layer of smaller trees growing underneath covered less than 8-12 percent of the landscape.

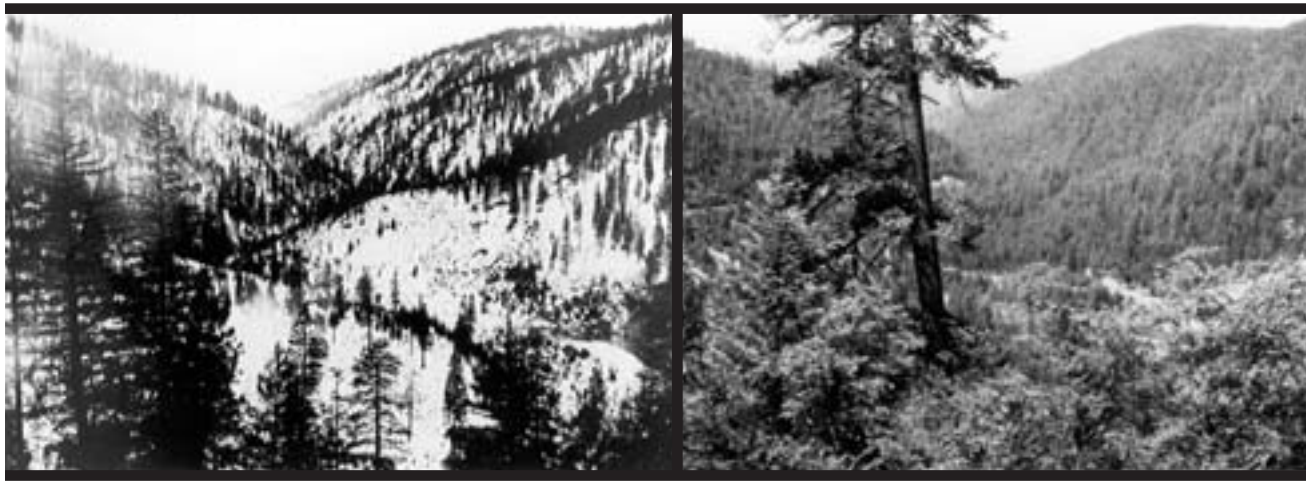
Young forest patches begin in openings with full sunlight. They attract wildlife because of the lush vegetation. Middle-aged forests are characterized by an open understory because the thick canopy blocks sunlight. Mature and older forests have taller, more widely spaced trees that provide enough sunlight for diverse understories, although gentle fires kept most of them open. Older forests tend to have large trees and more downed wood and snags (dead, standing trees). As the succession cycle continues, older forests eventually become new openings where young forests renew the cycle, usually due to a fire or other disturbance such as bark beetle infestation.

Middle-aged forests feature an open understory and attract many diverse wildlife species.

Using pre-European settlement forests as a "reference historic forest," restoration forestry can recreate similar landscapes with most of their original diversity. Such a reference historic forest is inherently sustainable and diverse. It represents thousands of years of ecological development and use by native people, it existed during a period with similar variations in climate, and it is more thoroughly documented than forests from an earlier time.

Trees must be harvested

Native people shaped their landscape primarily through the use of intentionally set fire, although they also cut trees. And while "prescribed burns" can be an effective forest-management technique today, they are just one tool in a forester's toolkit.



This photo was taken in the 1890s. The location is along the east branch of the north fork of the Feather River in Plumas County, California. The area had not been logged.

This photo was taken in 1993 at the same location as the photo at left. The ridge to the left had been logged seven years earlier, the remaining landscape was untouched.

Mechanical harvesting allows efficient, precise tree removal.

Prescribed burns have their place in restoration forestry, but they do not make productive use of forest resources, do raise air quality concerns and cannot be used safely where forests are dangerously overgrown. Prescribed fires can and do get out of hand and cause considerable damage to communities that thought they were safe. The Los Alamos fire of 2000 was a prescribed burn that escaped. Research shows prescribed burns are more likely to escape in California than in any other state.

Mechanical tree harvesting also can be an effective forest-management technique. Today's harvesting technology is computer driven, light on the land, and precise. Combined with erosion control and wildlife habitat conservation strategies, mechanical harvesting can create a range of desired forest conditions and restore forests while making productive use of forest resources.

Mechanical harvesting can be used to implement even-aged and uneven-aged forest management strategies. Even-aged management means harvesting most of the trees of a certain age or size from the landscape, leaving a few trees for wildlife habitat. Even-aged management, sometimes called "clearcutting," is rarely practiced on public lands and heavily regulated on private lands in California, restricted to small patches of land. It can create openings in dense forests and edge zones that allow biodiversity to flourish in a way similar to how fire created openings in historic forests.

Uneven-aged management involves harvesting selected trees of different ages or sizes, or small patches of trees. When individual trees are removed it is called single-tree selection and when small patches of trees are removed it is called group selection. Single-tree and group selection are the most effective ways to restore and sustain California's public forests. The result is a thinned forest that retains much of its historical character and visual aesthetics.

Most forest management includes replanting harvested land with native species acclimated to a site's elevation and other characteristics. On private forestlands for example, many trees are replanted for every one harvested.

Vision comes first

Restoration forestry focuses on what forests will look like after the land has been treated, not on what vegetation is being removed. While densely packed smaller trees may present the greatest fire danger, for instance, removing only young trees would ultimately result in a senior-citizen forest that would present its own challenges. You don't want just old, decaying trees on the landscape; they are not productive, diverse, nor sustainable.

This is why the reference historic forest is so important. By understanding the forest characteristics that were present historically in a region, forest managers can return those characteristics to the landscape. Restoration forestry simulates the dynamic character of historic forests by maintaining the natural variation of patches of older and younger trees within the forest mosaic.

To get back to a natural forest landscape, trees of all ages must be harvested in different numbers at different times. While older forests must be part of the

Having a vision of what a restored forest should look like when work is completed is essential before work starts.

mosaic, for instance, harvesting some older trees provides space for new, young forests that are essential in establishing a sustainable cycle of forest succession.

Flexibility required

Under the restoration forestry umbrella, foresters must have a full set of tools at their disposal and the flexibility to manage each forest as site-specific characteristics dictate. The one-size-fits-all regulations that govern private forest management in California and most public forests will likely prove too restrictive to encourage true forest restoration. A focus on results would be preferred.

Different types of forests require customized treatments, even though the restoration concepts are the same. For instance, a forester's approach to a coastal redwood forest would be markedly different from that of an inland mixed-conifer forest, but in each case, the plan would result in the types of patches historically found on the landscape and in similar proportion. [**For more information of restoring specific types of forests, visit www.calforestfoundation.org.**]

People have altered the natural fire regime and forest landscape. It's up to people to restore it. ■