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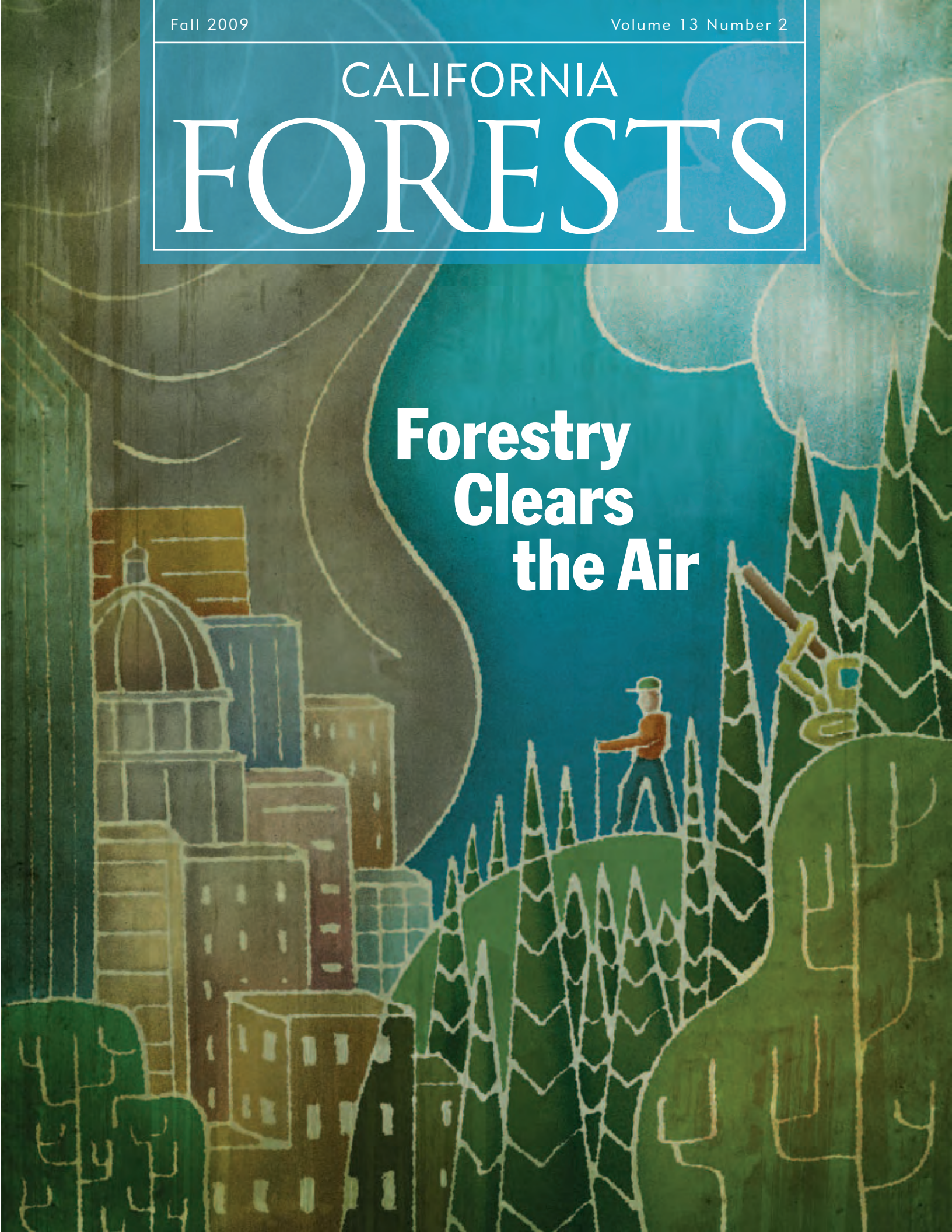
CALIFORNIA FORESTS

Forestry Clears the Air



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Fire on the Landscape

Current policies and a changing climate lead toward higher costs, more severe wildfire

Fuel loads often must be treated mechanically before prescribed fire can be safely introduced.

By Christopher Dicus, Ph.D.

Fire is a natural part of California's forest ecosystems. Or is it?

Fire has historically helped shape millions of acres of California forestland. But there is a vast difference between high-intensity and low-intensity fire events; between what Californians experience today and what European settlers encountered here.

California recently has witnessed a dramatic increase in large, high-severity wildfires, which will likely continue unabated unless steps are taken to address the unprecedented fuel loads that clutter both public and private forestlands. This is a Herculean challenge given that more than 8 million acres are at very high risk of severe wildfire, budgets continue to be strained, and infrastructure to support fuel reduction efforts is in decline.

Historically, frequent low-intensity fires set by native people or lightning-strikes helped clear many California forests of debris and prevented excessive fuel accumulations. These fires moved slowly across the forest floor, burning pine needles, grass and fallen branches. Flames generally one- to three-feet high had little effect on mature trees, flaring up only occasionally to open small gaps, which helped to regenerate forests and sustain them long-term.

High-intensity fires such as the 2007 Angora Fire or the 2008 Uncles Complex can race through treetops with 200-foot flames and scorching heat that destroys organic material in soils, consumes seed-sources and can turn what was once forests into vast shrub fields for decades. These fires can create their own weather and propel embers a mile or more away, which start new "spot" fires and thwart firefighter efforts.

> The resulting high-intensity wildfires are as unnatural as the fuels they consume.

Unnatural fire

A century of aggressive fire suppression and decades of restricted timber harvesting have resulted in an unnatural accumulation of fuels on many California forestlands. Where 50-70 trees per acre stood before the Gold Rush, California forests now average over 400 trees per acre. When fire enters these ecosystems the resulting high-intensity wildfires are as unnatural as the accumulated fuels that they consume.

Climate change exacerbates the problem. Spring thaws now come sooner, leaving forests without water for longer periods of time and starting fire season earlier. Dryer conditions stress trees already facing fierce competition for water and nutrients. Subsequently, more trees die and forests become vulnerable tinderboxes.

Whereas smoke from small, low-intensity fires tends to dissipate quickly, large high-intensity wildfires can foul the air for weeks. Annually, wildfires in California emit millions of tons of pollutants into the atmosphere, which can degrade air quality for hundreds of miles. The particulate matter in smoke, often smaller than 10 microns, is especially harmful to the health of children and the elderly.

Efforts to reduce fuel loads must consider economic and social realities. Ironically, it often seems that well populated areas such as Cambria or Lake Tahoe, where fuel-loads pose the greatest danger, provide the stiffest resistance to fuel-reduction efforts. Residents placing a high value on forest aesthetics frequently object to the smoke that can accompany prescribed burns

Photo credit: Cy Phenice. Thanks to wildlandfire.com.

<< High-intensity wildfires burn hotter, with greater environmental consequence and consume more firefighting resources than low-intensity wildfire.

(low-intensity fires intentionally set under certain fuel-load and weather conditions) or the thinning that could make the forests in which they live safer.

Prescribed burns can offer a relatively low-cost means for reducing fuel loads, but many forestlands are simply too overgrown to safely introduce any degree of fire. Where there is significant risk of a prescribed burn morphing into the kind of high-intensity wildfire that forest managers are aiming to prevent, areas must be mechanically treated first, some trees cut and brush removed.

Economic relief?

Mechanical thinning could potentially pay for itself, but instead is becoming more expensive as the state's forestry infrastructure slips further into decline. Current regulations discourage harvesting of larger trees to be harvested during fuel-reduction efforts. That should change, the value of harvesting a few large trees could offset costs of thinning operations and increase the land area that can be treated with existing dollars – provided there are still sawmills to take the wood.

One-third of California's sawmills have closed in the last nine years, leaving many forest managers with limited local infrastructure to help manage accumulated fuels. The increased haul costs rapidly eat away available thinning funds, and much-needed work goes unfunded and undone. The more infrastructure we lose, the higher fuel-reduction costs we will incur.

At present, Californians spend more than a billion dollars to fight wildfire annually and relatively precious little to prevent it. It's time for a more balanced equation.

Given the ecological impacts of large, high-intensity wildfire and the threat to communities throughout California we should be doing more to reduce fuel loads across the state. Policies that encourage investment in forestry infrastructure and stretch fuel-reduction dollars would pay Californians and their forests considerable dividends. ■

<< Overcrowded forests create ideal conditions for high-intensity wildfire, with ladder fuels that can quickly bring surface flames into tree crowns.

Harvesting a few large trees could offset thinning costs and increase the land area that can be treated.

The more infrastructure we lose, the higher fuel-reduction costs we will incur.