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# Thomas Cahill: Manage our forests better to curb wildfire pollution

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As smoke plumes hover over Southern California and Tahoe forests stand plagued by dangerous fuel accumulations, it's time to consider how wildfire smoke affects people and develop solutions that leverage the air-cleansing potential of managing forests.

Have you ever seen a smoky haze over a mountain lake in the morning, followed by clear skies all afternoon? Or a mile-high smoke plume stretch toward the horizon?

Only one of these scenarios occurred with any degree of regularity in historic Sierra Nevada forests. The other happens all too frequently today because California's forests have become overgrown with unprecedented fuel loads.

The air-quality dynamic playing out in the Tahoe Basin differs dramatically from pre-Gold Rush experiences. Historically, flames and smoke as intense as those from the 2007 Angora fire and the 2002 Star fire were rare.

Only the recent accumulation of forest fuels has made catastrophic wildfire a near-annual reality in the Sierra.

But if we were to combine what we have learned about forest management and wildfires with what urban forestry has revealed, we might find a blueprint for restoring forests and improving air quality across Northern California.

Historic Tahoe forests were far less dense than the national forestland that now covers most of the Tahoe Basin and Sierra.

When fire struck pre-Gold Rush California, flames generally stayed low, and smoke mingled among the trees. Leaves and needles cleaned the air as the smoke lingered, and as winds picked up through the day, the smoke layer dissipated.

In pre-European-settlement Tahoe, fires burned about 35 acres every day each summer.

While that would have put a thin layer of smoke over the lake each morning, it would not have violated today's stringent air quality regulations. Smoke levels from wildfires like the Angora fire are often 10 to 60 times greater than Environmental Protection Agency standards.

We've known for decades that trees clean the air by absorbing carbon dioxide, storing the carbon and releasing oxygen. Recent University of California, Davis, studies have shown that trees also can efficiently remove small particles from the air.

Smoke, if it lingers in tree canopies, can be partially removed before it gets above the treetops and over the lake.

Conifers are especially adept at absorbing fine airborne particulates, especially those smaller than 2.5 microns in diameter, like smoke. These particulates are too small to settle and too large to dissipate but can lodge in human lungs and aggravate respiratory ailments. That's why establishing urban forests near schools and hospitals can help bring relief to asthma sufferers and reduce the severity of respiratory illnesses.

Tahoe's air quality would benefit greatly from managing forests to reduce fuel loads and provide the particulate-removing advantages of historic forests. Instead, the current practice is often "pile burning."

Pile burning is the practice of burning branches and wood from thinning operations that prevent excess "ladder" fuels from turning low-intensity ground fires into high-intensity wildfires in open piles when regulations allow.

Pile burns, however, generate enough updraft so their smoke usually punches through the canopy and enters the regional air mass.

To get the full air-quality benefit that Tahoe's forests offer, we should manage forests to be fire resilient like historic forests. Doing nothing invites ecological devastation from wildfire and massive, widespread air quality impacts. There is nothing sustainable about our overgrown forests. We need to include sawmills and biomass energy in the solution, and focus on establishing open forests with large and widely spaced trees.

A robust forestry infrastructure can help turn fuels into wood products and energy, and help make sustaining, fire-resilient forests economically feasible. Bolstering the region's forestry infrastructure would deliver the triple air quality benefit of less-severe wildfire, more particulate absorption and less burning of fossil fuels for energy.

We ought to replace open burn policies that degrade air quality with investments in a sustainable infrastructure to make our forests safer and our air cleaner.

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