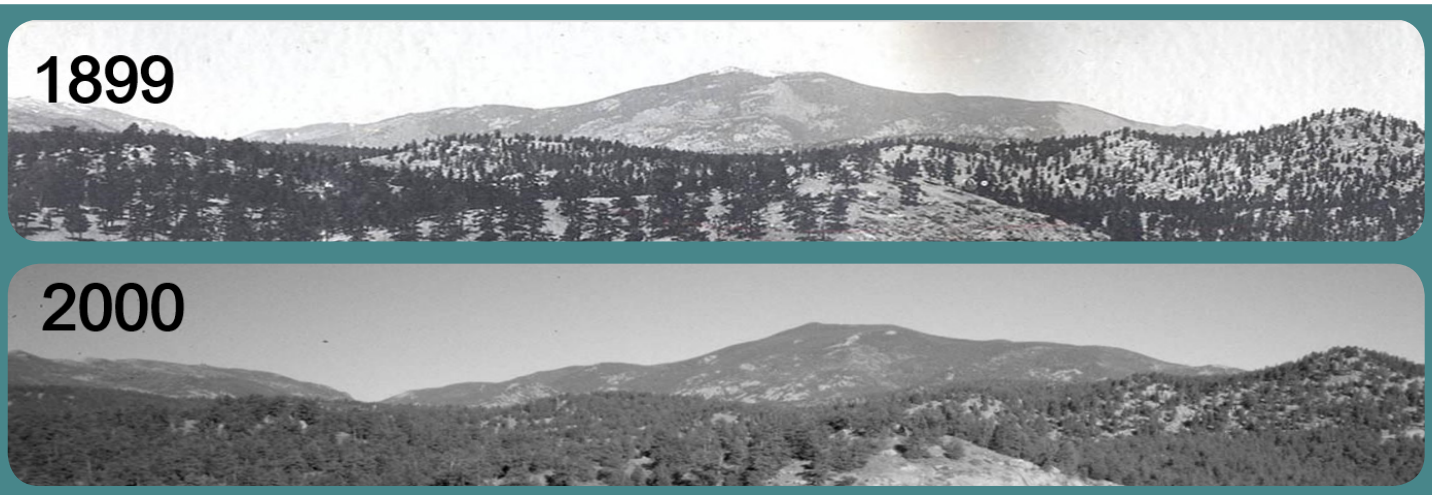
COLORADO FOREST RESTORATION INSTITUTE | COLORADO STATE UNIVERSITY

Cutting Down Trees Isn't Always a Bad Thing

On Colorado's Front Range, forests have departed dramatically from pre-European settlement conditions. Since around 1860, human activities such as urban development, fire suppression, timber harvest, and grazing have impacted forests along the Front Range. Historically, wildfires helped regulate forest structure and fuels and these forests were complex mosaics of trees with diverse size, density, and distribution. But human pressure and fire exclusion have resulted in nearly one million acres of dense, uniform forests that are now vulnerable to large and severe wildfires, insects, and disease, and the broad-reaching consequences of these disturbances. For these reasons, forest restoration on the Front Range often means removing trees by cutting, mastication, or prescribed fire.

Our forests used to look different...



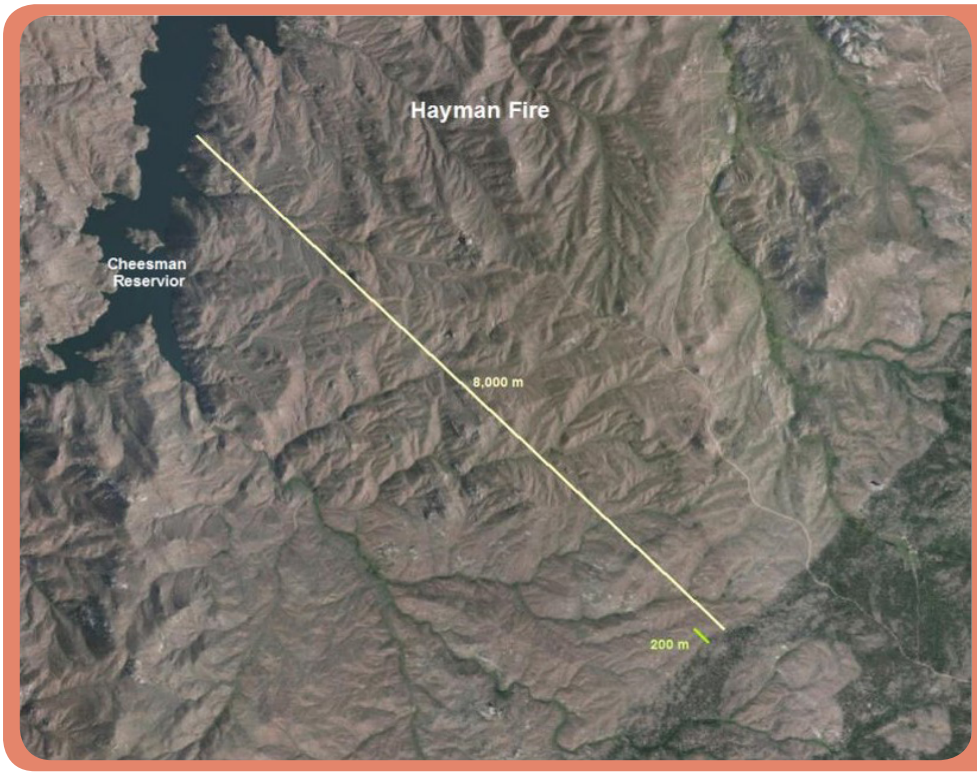
Historical photos like these are one resource that researchers use as they determine historical structure of Front Range forests. Looking at this photo, it's easy to see how over the past 100 years the density of trees has increased, the forest structure has become more uniform, and there are now fewer gaps between single trees and groups of trees.

Credit: Denver Water

Front Range forests are historically adapted to fire.

Fire is an important ecological process for dry mixed-conifer and ponderosa pine forests like those that dominate the Front Range. Historically, most areas of our forests would experience fire every 8 to 60 years. This is much more frequently than they burn now. Ponderosa pine trees have thick bark, and their lowest branches begin relatively high on the tree. When a low-intensity ground fire burns through a stand of ponderosas, many of the mature trees survive, while fuels that could build up to feed a more intense fire in the future are consumed. Additionally, smaller trees and trees like Douglas-fir, whose branches start lower to the ground and could carry fire into taller trees are killed before they become a risk. Fires are also important for nutrient cycling, and promoting growth in understory plants.

Why does it matter that our forests have changed?



A uniform forest is not very resilient. A single disturbance like a severe fire or beetle outbreak could leave large patches of dead trees if there is nothing to break up the landscape and resist, slow or redirect the threat. For example, the 2002 Hayman fire has a high severity burn patch that burned so severely that practically no trees remained alive in an area 8,000 meters (that's about 5 miles!) across. Research suggests that it may be many thousands of years before this area is reforested. In fact, it may transition permanently from forest to grassland.

Credit: M. Chambers

How can we make a difference?

We can start by strategically removing some trees. Cutting for restoration is different than traditional logging. In traditional logging, the largest, most valuable trees are cut down and taken out of the forest. In a restoration setting, the goal is not only to remove timber, but to improve the structure of the forest and make it more able to experience low-intensity fire in the future. Most of the trees taken will likely be much smaller than those traditionally valuable for timber harvest. Some prescriptions may also emphasize removing less fire-tolerant species like Douglas-fir in order to favor ponderosa pine. Trees might be removed mechanically, by prescribed fire, or a combination of methods.

Credit: P. Brown

Other resources

The work we do at CFRI helps to inform strategic restoration and, yes, tree cutting. To learn more about the science we use to inform these questions, check out these resources, and other publications on our website:

Principles and Practices for the Restoration of Ponderosa Pine and Dry Mixed-Conifer Forests of the Colorado Front Range

RMRS Science You Can Use: Back to the Future

RMRS Science You Can Use in 5 Minutes: Building Resilience in Colorado Front Range Forests for the Future