Wildfires are a natural occurrence in Oregon's forests, especially in the state's "dry forests," where periodic burns actually contribute to overall forest health. Many plants and trees have adapted to wildfires, and some species can't survive without them. For example, a lodgepole pine needs heat from wildfires for its cones to open and release seeds. In central and eastern Oregon, periodic low-intensity wildfires burn away smaller trees and brush. This fosters the regrowth of new trees and plants.

But fire suppression practices over the past 100 years have created overly dense forests, fueling bigger and more destructive wildfires. Climate change may be another reason Oregon's wildfire seasons are getting longer.

People start a large number of wildfires in Oregon. Major culprits include backyard burn piles and unattended campfires, according to the nonprofit fire prevention organization Keep Oregon Green.

Whether sparked by lightning or human-caused, wildfires can harm fish and wildlife habitat and damage nearby homes or other structures. They're often costly to extinguish and can negatively affect air and water quality.

Historic fire behavior

Fire has always been part of forest ecosystems in Oregon, and has shaped forests in various regions of the state differently:

Dry forests

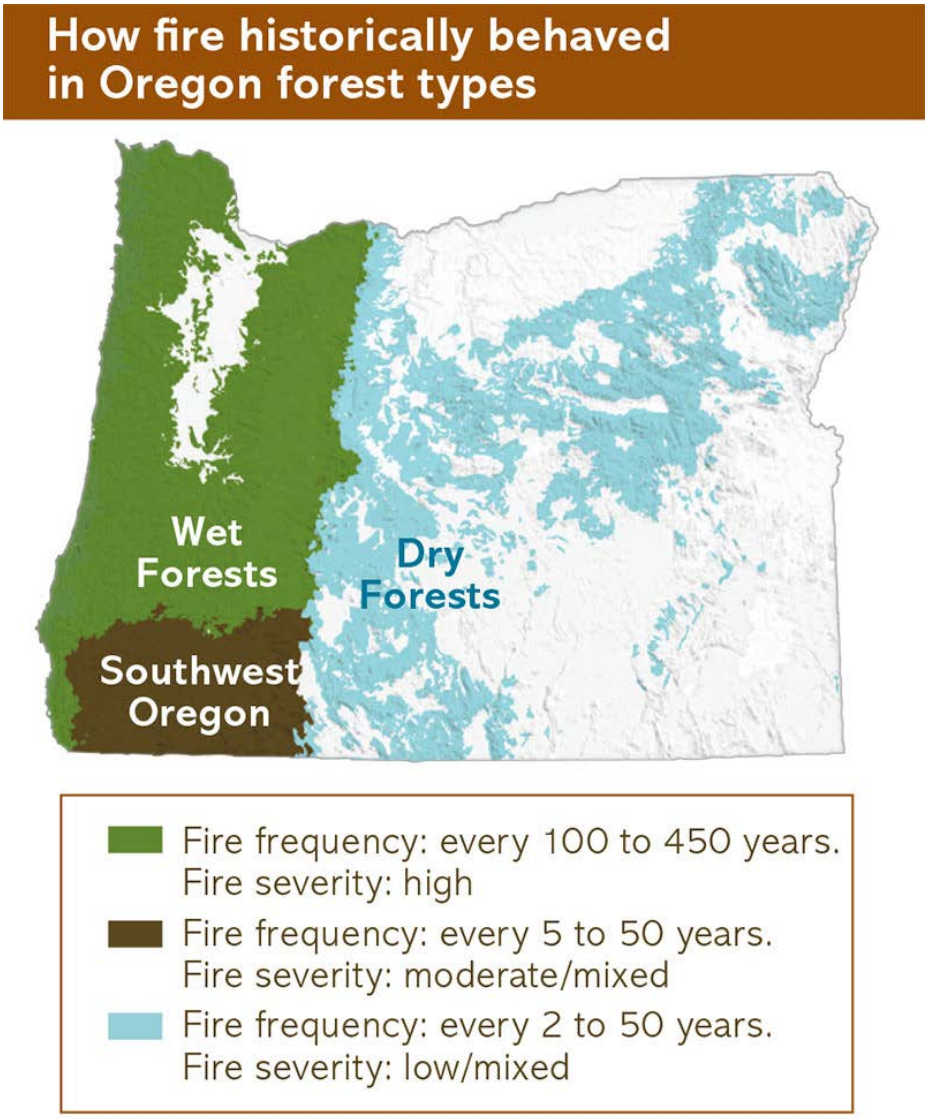
In the dry ponderosa pine forests of central and eastern Oregon, fire historically burned through any given area every two to 25 years. But the fires generally were not intense. Understory plants were burned off, but large trees usually survived.

Wet forests

In the wet Douglas-fir forests on the west side of the Cascades and in the Coast Range, fire in any given stand is much less frequent, once every 200 to several hundred years. The historic record shows numerous instances of large, intense fires that killed most of the forest.

Southwestern Oregon forests

Interior southwestern Oregon forests experience some of the dryness of east-side forests, but with productivity more like west-side forests. They have intermediate fire behavior, and historically burned with mixed severity every 25 to 50 years.



Suppression is expensive

To protect human lives and structures, it's often necessary to suppress wildfires. In fact, over the past decade Oregon has spent more than $226 million fighting forest fires on state-protected lands.

Fire suppression, while beneficial in the short term, can have long-term negative effects. The exclusion of natural wildfire can, over decades, result in dense, overstocked forests with an overabundance of understory that would normally be removed by natural fires. These forests will inevitably experience fire, but with potentially much more devastating results.

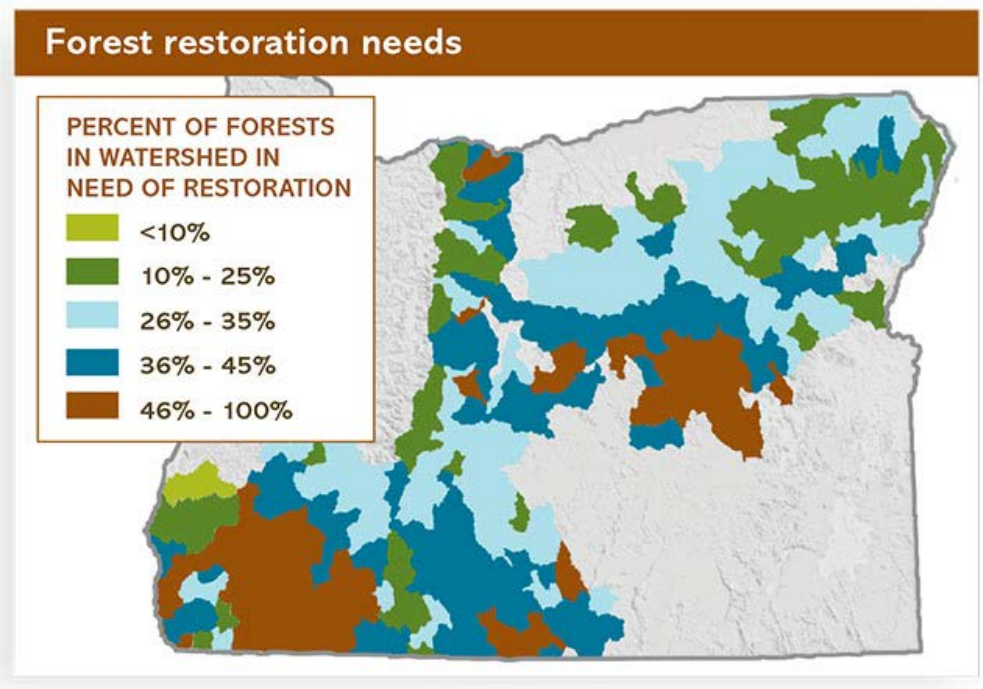
With so much fuel on the ground and so little space between trees in these unnaturally dense forests, fires are more destructive than the frequent low-intensity wildfires that once naturally thinned out smaller trees and underbrush. When dry brush and shrubs aren't cleared away, they can become "ladder fuels" that make it possible for fire to reach the top of the forest canopy, which can kill entire trees.

Intense fires can also harm water quality and alter soil characteristics. This increases the chances of erosion and can hinder post-wildfire reforestation efforts and the forest's natural ability to regenerate.

Forest restoration

The state and federal government, as well as local stakeholders, are working together with logging contractors to accelerate the restoration of central and eastern Oregon federal forests back to the conditions they were in before wildfire suppression allowed them to become unnaturally dense and prone to destructive fires.

These restoration projects involve active forest management, including thinning trees, mowing dry brush and prescribed burning, to improve forest health and fire resiliency. Restoring more open forest conditions through thinning makes it harder for wildfires to become large, catastrophic fires. Thinning also decreases the competition among the remaining trees, allowing them to grow larger, healthier and more fire-resistant. Prescribed burns mimic the natural role fires play in forests by clearing away brush and having a rejuvenating effect on plants and trees.



The percentage of all forests within a watershed in immediate need of restoration treatments. Overall, more than 6.6 million acres of fire-adapted forests in Oregon are in need of restoration. [27]

Forest Threats: Forest Fire

Fire can be a particularly destructive threat to Oregon's forests, but active forest management can help lessen the impacts. (Watch video: https://youtu.be/jjn262Wzvo4.)

Forest collaborative groups

In central and eastern Oregon, forest collaborative groups are bringing together a diverse group of stakeholders, including representatives from the conservation community and the timber industry, to find consensus on improving the fire resiliency of public forests.

Group members are developing “zones of agreement” on ways to make federal forests less prone to larger, more destructive wildfires while achieving economic and environmental benefits. The goal is to give the U.S. Forest Service candid feedback on restoration projects and avoid gridlock caused by lawsuits that stop timber harvests.

Federal forest restoration projects support jobs with local logging companies and lumber mills. Revenue from harvested timber also helps pay for related efforts such as wildlife habitat enhancement and stream restoration.

Oregon has more than two dozen collaborative groups, involving hundreds of Oregonians working together to find common ground on forest restoration and other important federal forest management issues across the state.

Insects are small, but they pose a big threat to Oregon's forests.

Pests such as bark beetles can detect when a tree is stressed from drought, root disease or storm damage. That's when they attack, burrowing through tree bark to lay their eggs. Bark beetles often kill trees that are already suffering, and the results can be devastating, especially in central and eastern Oregon.

Entire forests in Oregon are affected by species such as the mountain pine beetle. Other types of insects that can cause major damage to forests include wood-boring beetles, which typically bore directly into the sapwood, and caterpillars that voraciously feed on foliage.

Often, an insect infestation is the final nail in the coffin for a tree that's already unhealthy because of root disease or another factor. Active forest management that helps keep trees healthy is often the best defense against insects. This could include thinning to give the healthiest trees the best chance to thrive and clearing away the woody debris left after a timber harvest, which can harbor insects.

Planting native trees that are adapted to the climate and soil or cultivated to be resistant to certain diseases also improves a forest's chances of surviving an insect infestation.

Forest Threats: Insects

Oregon is a great place to grow trees, especially the sturdy conifers we use to build our homes and office buildings. But our forests are vulnerable to multiple threats. Join Mike Cloughesy, director of forestry at the Oregon Forest Resources Institute, to explore some of the threats facing Oregon's forests, and see how active forest management is helping combat these threats. (Watch video: https://youtu.be/MWl-3Gz0q6A.)

Insect threats to Oregon forests

Bark beetles

Rice-size insects that as adults burrow through tree bark to form galleries where they lay their eggs. After hatching, the larvae chew the inner bark, girdling the tree by cutting off its vascular tissues.

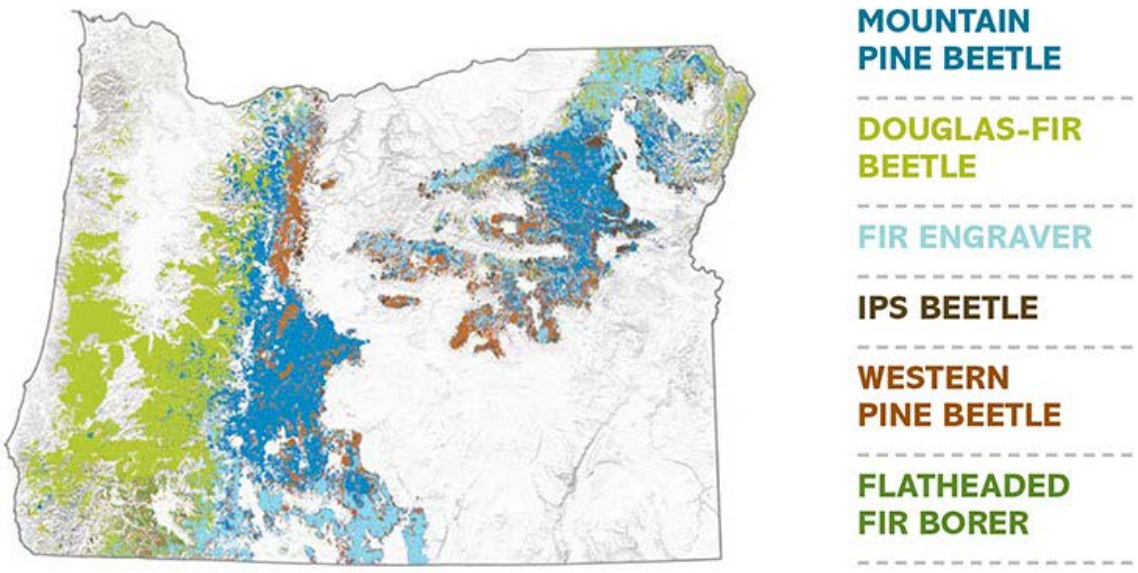
Defoliators

Moth and butterfly caterpillars or sawfly larvae that voraciously feed on conifer foliage or buds.

Wood borers

Beetles that typically attack dead or dying trees, boring directly into the sapwood.

Insect species ranges in Oregon



Source: Oregon Department of Forestry

Native tree diseases are a particularly common menace to Oregon's western forests. Among the most prevalent diseases in Oregon are Swiss needle cast and laminated root rot. Swiss needle cast is a foliage disease that affects Douglas-fir trees. It causes trees to prematurely shed their needles.

Laminated root rot attacks and kills a tree's root system. This hinders its ability to suck up water and soil nutrients. Trees affected by root disease are also more susceptible to bark beetles and wood borers, and are more likely to fall during a storm or high winds.

But there are ways to combat and prevent the spread of tree disease with active forest management. For instance, planting hardwood tree species such as alders that are not affected by root disease is one way to fight the pathogens. Other management techniques to treat root disease include harvesting a buffer around diseased trees, and breaking the chain of root contact between infected and healthy trees through thinning.

Forest Threats: Tree Disease

Tree diseases such as Swiss needle cast and laminated root rot threaten the health of Oregon's forests, but active forest management helps prevent or slow the spread of these diseases. (Watch video: https://youtu.be/5ySILptQO1g)

Disease threats to Oregon forests

Dwarf Mistletoes

Parasitic, flowering plants that can slow tree growth, deform crowns and branches, and eventually kill the trees in which they grow.

Foliage Diseases

Caused by fungi that infect tree leaves or needles and cause them to fall prematurely from the tree. In the case of foliage diseases known as needle blights, the dead or partially dead needles often remain attached to the tree's branches.

Root Diseases

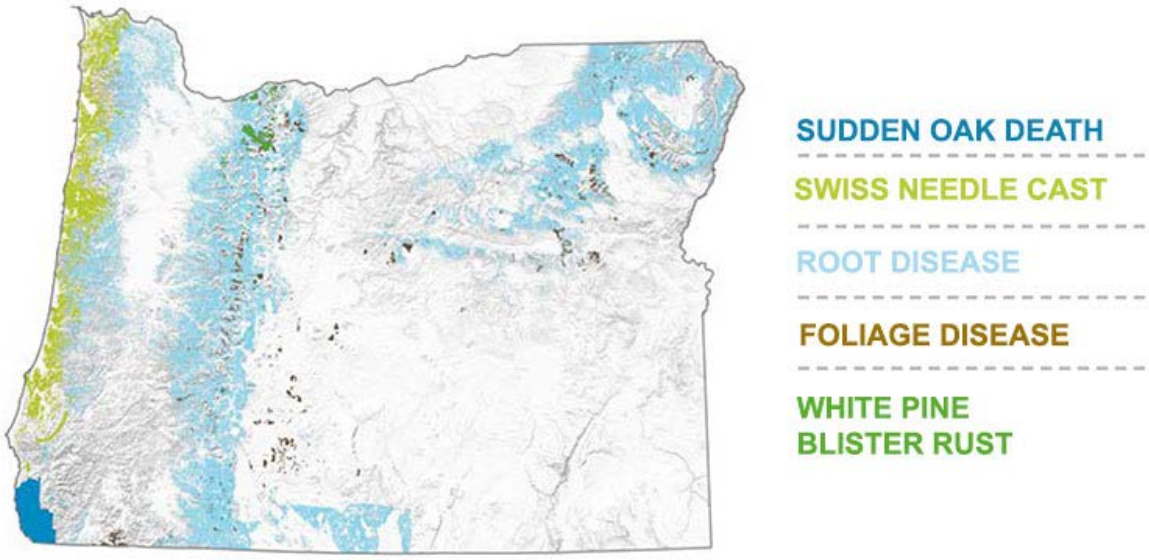
Caused by fungi and pathogens that attack and kill a tree's root system. Trees affected by root disease are more susceptible to bark beetles and wood borers, and are more likely to fall during a storm or high winds.

Rust Disease and Stem Cankers
Localized areas of dead bark on a tree branch or trunk are caused by fungi that destroy the inner bark and kill branches and entire trees. White pine blister rust, a stem canker caused by a non-native fungus, has devastated five-needle pine trees growing in Oregon.

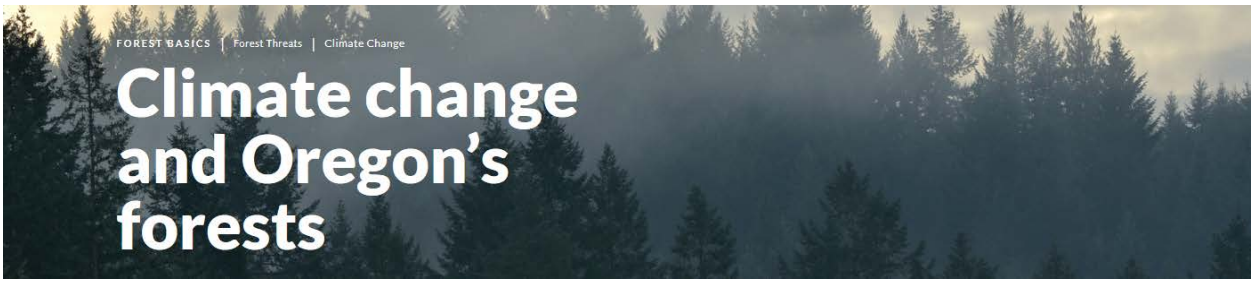
Stem Decay
Caused by fungi that enter trees through wounds or small branches.

Sudden Oak Death
A non-native pathogen that has killed hundreds of thousands of tanoak trees on the southern Oregon coast. It has a wide host range and can cause branch dieback and leaf spots on many native plants and trees, including Douglas-fir trees.

Tree disease ranges in Oregon



Source: Oregon Department of Forestry



Climate change amplifies the effects of forest threats, such as fire and insects. Rising temperatures and prolonged droughts in some parts of Oregon are impacting forests in a number of ways, according to researchers from Oregon State University's College of Forestry and Portland State University's School of the Environment. This includes contributing to longer, more intense fire seasons and increased insect and disease outbreaks.

Climate change may even reshape the makeup of Oregon's forests in some areas, as conifer trees that need more moisture to live have a harder time surviving. In other regions of the state, such as northwestern Oregon, climate change models show increased moisture in the future.

More intense storms and extreme weather caused by climate change could also have lasting impacts on forest health. Tree with limbs that are snapped off in storms are more prone to insect and disease outbreaks. Freshly downed trees and branches attract bark beetles and could fuel a wildfire.

The good news is that the impacts of climate change can be lessened with active management, especially through forest restoration, thinning and fuels reduction for wildfire resiliency.

Forests also serve a vital biological role in mitigating the effects of climate change, because trees absorb and store carbon through photosynthesis. This carbon continues to be sequestered even after a tree is harvested and manufactured into wood products.

Forest Threats: Severe Weather

Storms and severe weather can have lasting impacts on forest health, but active forest management often minimizes the damage. (Watch video: https://youtu.be/qWUYI252aeU)

An entirely human-caused threat to forests is conversion to other land uses. In other parts of the world, destruction of forestland for agricultural use continues to be a major threat. But when forestland is lost in Oregon, it tends to happen because of residential or commercial development.

In the four decades between 1974 and 2014, about 247,000 acres of private Oregon forestland was converted to other uses, mostly to low-density housing. When a forest becomes a housing development, for instance, the benefits it provided to society as a forest, including carbon sequestration, clean water and wildlife habitat, are lost.

Oregon laws help protect forests

Fortunately, Oregon has done remarkably well in protecting forests from development. In fact, Oregon's loss of forestland between 1974 and 2014 was less than half the loss seen in neighboring Washington state over the same time period. That's due largely to differences in Oregon's land-use and forest-practices laws, which work in tandem to help keep forests as forests.

Want forests to stay forests? Buy forest products:

It may sound counterintuitive, but one of the best ways you can help Oregon forests stay forests is to buy forest products such as paper and wood. This is because when private landowners have an economic incentive to preserve forestland by earning income from selling timber, they're less likely to sell it for development into housing or other uses. Landowners are also required by Oregon law to replant trees after a timber harvest, ensuring these forests will remain forests into the future.