The Secret Life of Burned Forests: How Fire Creates Life, Diversity, and Renewal

By Cheryl Ames

Photo: Cheryl Ames

To many of us, a burned forest looks like a tragedy frozen in time. Blackened trunks, fallen trees, and open hillsides can appear lifeless compared to the dense green forests we are accustomed to seeing. Yet beneath that first impression lies one of nature's most remarkable stories of renewal.

A Forest's Second Beginning

Far from being biological wastelands, most burned forests become hotspots of biodiversity. Fire does not simply destroy life—it creates opportunities for new life, new habitats, and new ecological relationships. In fact, many of the forests of the American West evolved alongside fire for thousands of years. The landscapes we often think of as "natural" were shaped by recurring burns long before modern settlement.

Species That Depend on Fire

One of the strongest pieces of evidence that fire has always been part of these ecosystems is the existence of species that depend upon burned forests. The black-backed woodpecker is perhaps the best-known example in western mixed conifer forests. This striking bird is closely associated with severely burned forests and is rarely found in other habitats. After a fire, beetles and other wood-boring insects colonize dead and dying trees. The woodpeckers follow, feeding on these insects and excavating nesting cavities in fire-killed snags.

Several other woodpecker species quickly move into burned areas to feed on the insects that colonize fire-killed trees: American three-toed woodpecker, hairy woodpecker, white-headed woodpecker, and northern flicker. Other birds follow the woodpeckers, such as bluebirds, tree swallows, violet-green swallows, and chickadees. Open conditions make it easier to catch insects, inviting flycatchers and western wood-pewees. A few years later seed eaters and birds of prey move in to find food associated with the dense shrub stage that develops.

There is actually a surge in bird diversity in the first decade after a fire, with some species more abundant in severely burned forests than in unburned areas. Fire creates habitat features—standing dead trees, exposed soil, flowering plants, and dense shrubs—that simply don't exist in mature green forests.

Scientists sometimes refer to these habitats as "snag forests"—areas filled with standing dead trees. While they may look barren to human observers, they are

bustling ecosystems. Bats and small mammals also rely on these habitats during different stages of forest recovery.

The existence of specialized species like the black-backed woodpecker tells us something important: severe fires are not an ecological accident. These species could not have evolved to depend on burned forests if such habitats had not existed regularly throughout history.

Nature's Burst of Diversity

Fire creates a mosaic of habitats. Some areas burn lightly, some intensely, and others may escape the flames altogether. This patchwork increases ecological diversity across the landscape.

In western mixed conifer forests, the years following a fire often bring spectacular displays of wildflowers. Fireweed, pearly everlasting, lupine, and other flowering plants can blanket hillsides with color. The sudden increase in sunlight reaching the forest floor allows plants that may have been suppressed for decades to flourish.

Photo: Cheryl Ames

Many insects, birds, and pollinators respond quickly to this abundance. Wildlife often takes advantage of the mix of open spaces, shrubs, standing snags, and regenerating trees that characterize post-fire landscapes.

Some pine species produce cones that remain sealed until exposed to intense heat. Fire opens these cones, releasing seeds onto freshly cleared ground where competition from other plants is reduced. Certain shrubs quickly resprout from underground root systems after flames pass through. Fire can also reduce insect pests and plant diseases that might otherwise weaken forests over time.

In ecosystems where fire has been a regular visitor for centuries, many species have come to rely on it as part of their life cycle. Rather than being empty, burned

forests can become some of the most dynamic and biologically productive places in the forest ecosystem.

Photo: Cheryll Ames

When Green Doesn't Always Mean Healthy

Many people instinctively equate a green forest with a healthy forest. Green trees symbolize life, while burned trees symbolize loss. Yet forests are more complex than appearances suggest.

A forest can be dense, green, and seemingly healthy while hiding significant ecological problems. Decades of fire suppression in many Western forests have allowed trees to grow more densely than they did historically. In some places, forests that once contained a mix of open areas, large fire-resistant trees, and frequent low-intensity fires have become crowded with small trees competing for water, sunlight, and nutrients.

These dense forests may experience greater stress during droughts. Competition for limited resources can weaken trees and make them more vulnerable to insects, disease, and extreme wildfire. In other words, a forest's color alone tells us very little about its ecological condition.

The Problem with a Green-Only View of Nature

When we assume that every healthy forest should be thick, green, and unburned, we risk overlooking the natural processes that maintain ecological resilience. Fire creates habitat diversity. It recycles nutrients. It opens space for new growth. It supports species that cannot survive elsewhere. Most importantly, it introduces variety into landscapes that might otherwise become increasingly uniform.

A forest that includes recently burned areas, young regenerating stands, mature trees, and old-growth patches often supports more biodiversity than a landscape composed entirely of dense green forest.

An Oregon example of this is the Eagle Creek Fire of 2017. As a human-caused fire that damaged so much of the striking western Columbia River Gorge, the results caused much sadness in those who love the area with its waterfalls and trails. Some trails were closed two years and one in a particularly sensitive area is still not open. However, the Eagle Creek fire created a mosaic burn pattern that left some areas unscathed while others were severely damaged, supporting early ecological renewal through fungi and new plant growth. Scientists have noted that at least two-thirds of the burn area experienced ecologically beneficial fire, fostering habitat diversity for native wildlife species.

Nature rarely aims for permanence. Instead, healthy ecosystems are constantly changing. Growth, death, disturbance, and renewal are all part of the same cycle.

Photo: Cheryl Ames

Seeing Burned Forests Differently

Burned forests challenge our assumptions about what nature should look like. While fire can certainly be destructive to human communities and infrastructure, ecologically it is a force of renewal.

The next time you encounter a burned landscape, it may be worth looking beyond the blackened trunks. Listen for woodpeckers tapping on snags. Look for wildflowers emerging from the ash. Notice the young trees beginning their climb toward the canopy.

What appears at first glance to be an ending may actually be the beginning of an entirely new chapter in the life of the forest—a chapter filled with diversity, adaptation, and unexpected abundance.

Resources and Further Reading

National Park Service, *Fire ecology—Lassen Volcanic National Park,* www.nps.gov.

National Park Service, Fire ecology—Glacier National *Park,* www.nps.gov.

Richard Hutto, *A Beautifully Burned Forest: Learning to Celebrate Severe Forest Fire*, August 28, 2025.

School of Environmental and Forest Services, *Post-fire recovery is faster than expected in the forests of the western Cascades*, Jan, 29, 2024, sefs.uw.edu.