

Fact Sheet: Restoring the Ecological and Social Integrity of Western Forests

Unnatural wildfires and unprecedented insect and disease outbreaks threaten the ecological and social sustainability of many western wildlands. Among the most endangered of these wildlands are forests dominated by ponderosa pine. There are 3.4 million acres of these forests in Arizona alone.

The Situation

Ponderosa pine forests need low-intensity fire. Low-intensity ground fire is the natural and crucial way to maintain a healthy ponderosa pine forest. Prior to Euro-American settlement, southwestern ponderosa pine forests burned frequently and at low intensity. These fires burned on the ground through grasses, dead pine needles, and other small fuels. They reduced fuels; controlled populations of young pine trees; and maintained robust populations of grasses, wildflowers, and shrubs--and the wildlife that depends on them.

Today's fires in those forests are different. In the nineteenth and twentieth centuries overgrazing by livestock removed many of the grasses that carried ground fire. Large, old-growth trees were logged. Fires were suppressed. As a result, small pines have proliferated, while grasses and wildflowers have declined. Today, when fire begins, it has the opportunity to burn quickly through the closely packed crowns of extremely dense pine stands. These crown fires are dangerous to human communities and can be ecologically devastating, destroying large areas of wildlife habitat, causing erosion, and degrading watershed values.



Unnaturally severe crown fire



Natural, low-intensity ground fire

The size, frequency, and intensity of forest fires are increasing. In the 1950s, a 200-acre crown fire was considered large in northern Arizona. In 2002, the Rodeo-Chediski Fire burned 469,000 acres, an area half the size of Long Island. The trend is likely to continue unless action is taken to restore forests to their former health and vigor.

The same conditions that cause severe fires cause other problems. Unnaturally severe fires are just one of several symptoms of the much greater problem of degraded forest health. Other symptoms of unhealthy ponderosa pine forests include: unnatural levels of beetle and disease outbreaks; declining wildlife and plant diversity; decreased flow in seeps, springs, and streams; and degraded habitat for humans.

Not all forests are alike: Some need high-intensity fire. Crown fire is natural in some forest types, such as lodgepole pine forests and high-elevation spruce-fir forests. Fires in these ecosystems are naturally rare but, when they occur, tend to be severe. Crown fires help rejuvenate these forests and promote the growth of such plants as aspen. Such areas should not be managed according to the same guidelines as ponderosa pine forests.

The Solution

Scientists at the Ecological Restoration Institute and elsewhere are developing a variety of science-based comprehensive treatments to reverse these trends. Treatments typically include some combination of cutting small trees, raking heavy fuels away from old-growth trees, and prescribed burning. Thinning and raking are necessary to reduce fuel loads so that low-intensity fire can play its natural role in keeping forests open and allowing grasses, shrubs, and wildflowers to grow.



Gus Pearson Natural Area, Arizona, before and after restoration treatment

The Policy Challenges

Attention has focused on a symptom rather than on the core problem. Attempting to suppress fires in overly dense ponderosa pine forests is expensive. For the past several years, the federal government has spent \$2 to fight unnatural fire for every \$1 spent to

prevent losses by restoring forests and avoid suppression costs and risks. It would be more cost-effective to focus proactively on the overall problem of degraded forest health than on the difficult, and sometimes impossible, task of controlling fires once they start.

Policies need to acknowledge that different forest types exist. Management policies that lump all forest types into a single solution fail because different forest types have different characteristics. Some forests naturally possess high fuel loads and burn catastrophically under natural conditions while others, like most ponderosa pine forests, do not. Much political acrimony centers results from failure to acknowledge ecological differences and the need for different management approaches.

Policies should focus on forest restoration, not just on reducing hazardous fuels. Policy makers should establish restoring the health and sustainability of forest ecosystems, not just hazardous fuel reduction, as a primary goal. By reversing the problem of declining forest health, restoration-based treatments provide the broadest possible solution to the problem of unnatural wildfire. Restoring forests enhances natural resource values: plant and wildlife diversity, watershed function, aesthetic enjoyment, recreational opportunities, and long-term sustainability.

Old-growth trees and stands should be defined by forest type and excluded from harvest. Most forest types have less than 5 percent of their old growth remaining. These are ecologically significant components of the ecosystem and should be saved.

Forest management should strive for the re-establishment of conditions that permit natural fire to burn. Fire plays a crucial and irreplaceable role in maintaining the ecological health of many forest types. Managing forests so that natural fire can burn will reduce suppression costs, lower danger to human communities, and maintain forest health.

Protecting communities *and* their surrounding forests is essential. Much political debate has centered on where to focus forest thinning and management efforts. It is critical to treat forests in and near human communities. But those human communities are embedded in highly valued forest landscapes. Restoration treatments should be implemented both near communities and in the greater forest landscape in order to protect watersheds, endangered species habitat, archaeological sites, and fire “corridors” that enable fire to move rapidly into towns.