

Tree Rings Tell a Story

Natural disturbances shape natural ecosystems. Fire affects the structure and species composition of plant communities, but the arrangement of plants also determines what kind of fires can burn in a place. As we manage forests for long-term ecological health, we want to learn about the natural role of fire.



Scientists have reconstructed fire histories of forests and woodlands, including those of the Santa Catalina and Rincon mountains, by looking at

fire scars within tree-ring records. These records tell us that fires burned frequently (every 5-20 years) until the late 19th century. Low-severity fires were generally carried by light fuels near the ground (grass, shrubs, young trees) and created open woodlands and forests. We also know that some vegetation types such as the Sonoran Desert are not adapted to fire. Invasive species such as buffelgrass will create a fire problem in these places. FireScape includes working with the Buffelgrass Coordination Center to determine how best to protect desert and other low-elevation landscapes where fire is not a natural disturbance.

In addition to keeping people safe, minimizing high-severity fire is a key goal for the Catalina-Rincon FireScape. The current cycle of fire exclusion and suppression, fuel buildup, and extensive, high-severity fires is ecologically, economically, and socially unsustainable. Everyone benefits if we restore woodlands and forests to conditions where most fires stay on the ground, a situation which is closer to the one occurring just 100 years ago.

Management that averts unnaturally severe wildfires will also help our landscapes store carbon. To monitor effects on the global climate change situation, FireScape scientists will also be analyzing how different treatments affect carbon cycle outcomes.



Collaborators

State of Arizona
Coronado National Forest
Mountain & Foothill Communities
Individual Landowners
National Park Service
The Nature Conservancy
Pima County
The University of Arizona

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FireScape: Santa Catalina & Rincon Mountains



**CORONADO NATIONAL FOREST
SAGUARO NATIONAL PARK
UNIVERSITY OF ARIZONA
THE NATURE CONSERVANCY
And partners**

What is FireScape?

FireScape is a framework which promotes managing fire across large landscapes to achieve ecologically sound, large-scale, multi-party and safe treatments that contribute to sustainable, resilient ecosystems. The FireScape approach embraces "adaptive management," which means that management is constantly improved based on feedback from earlier experience and scientific data. Carefully analyzed treatments will apply best practices across landscapes on both an opportunistic and intentional basis and may include both planned and unplanned ignitions as well as suppression in some areas.

This FireScape project is focused on managing fire across the Santa Catalina and Rincon Mountains in Pima, Pinal, and Cochise counties, Arizona. It is a collaboration of the Coronado National Forest, Saguaro National Park, the University of Arizona, The Nature Conservancy, Pima County, and other partners.

The Santa Catalina & Rincon Mountains-FireScape follows and fine-tunes a similar effort conducted for the Huachuca, Patagonia, and Whetstone mountains southeast of the Tucson area. The approach includes conducting planning and compliance activities up front and at large scale to shift human resources in a given year from paperwork to executing projects. University of Arizona scientists are providing information to help analyze effects of treatments.

Opportunity and Urgency

Although the 2002-2003 large fires in the Santa Catalinas were tragedies for many residents on the mountain and huge



expenses for public agencies and taxpayers, they also represent an opportunity to redirect ecosystem management. The 115,000 acres that burned in the Bullock and Aspen fires dwarf the feasible scale of mechanical thinning treatments. Tens of thousands of acres of dense wooded land remain in the Santa Catalinas, and these areas remain as fire-prone as the areas that burned. Consequently, there is still the potential – even the likelihood – for more fires on the scale and severity of Aspen and Bullock in the Santa Catalinas.

Careful management can reduce the risk of damaging fires using a combination of mechanical thinning and prescribed burns. These treatments have a “shelf life” of about 10-20 years in terms of reducing subsequent fire severity. Resources are then directed toward executing projects on the landscape as opportunities and appropriate burning windows are presented.

The post-fire mosaic that exists now is a “window of opportunity” to chart a new direction, especially for the Santa Catalinas.

The Rincon Mountains, which lack the settlements and facilities of the Santa Catalinas, have been the site of numerous prescribed burns and wildfires. Consequently, the Rincon forests are healthier and more resistant to high-severity wildfires. However, it is essential that low-severity fires still be allowed to burn episodically in these mountains.

Santa Catalina-Rincon FireScape Goals

Restore ecosystem processes and create resilient ecosystems

- Integrate the existing fire management program and FireScape
- Develop a basis for restoring sustainable, more natural fire regimes across large areas such as entire mountain ranges or large landscapes
- Improve management techniques and incorporate lessons learned from past and on-going work

Apply innovative and scientific approaches

- Take advantage of mosaic patterns and reduced fuels left by the Bullock and Aspen fires
- Use non-traditional tools and new technologies that have succeeded elsewhere
- Reduce undesirable effects of catastrophic wildfires on people and communities
- Conduct research and monitoring to answer key questions

Keep people engaged in all activities

- Develop a shared vision by seeking out and working with partners and the public
- Share our experiences with others

