7. Case History: The Epstein Property

Up to this point, we've given you background information and provided principles for making your forest more fire resistant. We have also discussed improving roads, access, and water sources so firefighters can more effectively respond to a wildfire on or near your property. There is a lot to consider and digest.

Even if you recognize that you have a high fire risk, how do you get it all done and who can assist you in doing it? We introduced you earlier to Bill and Sarah Epstein. The following example is from their property in southwestern Oregon. They, like you, recognized that they were at high risk for a wildfire. Their property was a virtual "postage stamp surrounded by a sea of fuel." They worked with a consulting forester to develop and implement a plan that would reduce their risk while sustaining and promoting other values and objectives for their land. (Although in less detail, other landowner examples are provided in Appendix C.)

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Figure 22. One way the Epsteins addressed fire ignition risk was through ongoing work with the public to reduce illegal trespass, such as along this trail that runs through the property. Access was maintained, but carefully monitored.

Introduction

Dr. William (Bill) and Sarah Epstein's 400-acre property is located about one mile south of the urban area of Ashland, Oregon. It is located at the very easternmost edge of the Klamath-Siskiyou province at elevations that range from 2,500 to 3,500 feet. The climate of the area is characterized by long, hot, dry summers, with only about 15 percent of the annual rainfall occurring during the months of May through September. Annual precipitation averages 25 to 29 inches.

Fire history

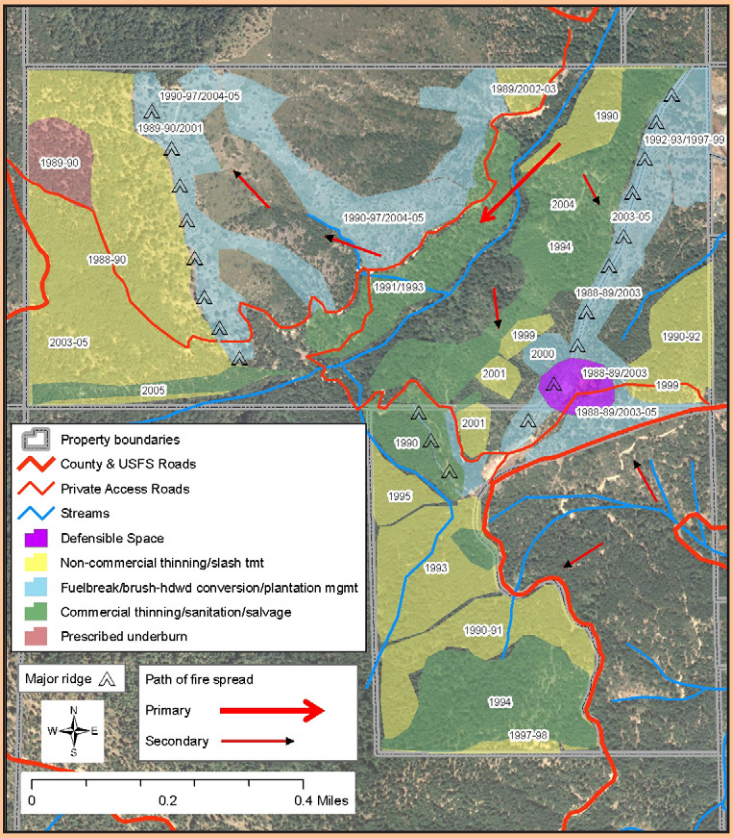
Because of dry, hot summers in this region and the propensity for lightning strikes, fire season generally lasts from early June through October and large-scale, high-severity wildfires are a distinct possibility. In fact, this has occurred several times in the past 100 or more years. In 1901, nearly all the Epstein property was involved in a wildfire. Again, in 1973, the 750-acre Hillview Fire, started nearby by an arsonist, burned close to 200 acres of the Epstein property.

These two high-severity wildfires were much more severe than the relatively frequent, low- to moderate-intensity surface fires that historically burned in this area. Such high-severity fires have led to the conversion of forests to more fire-prone brush fields, setting up the area for a repeating sequence of high-intensity fire.

Vegetation

The existing vegetation reflects the disturbance history and resulting changes that have occurred since 1850. When Bill Epstein purchased the property in 1987, dense and extremely wildfire-prone brush fields, dominated by white-leaf manzanita and Pacific madrone, covered most of the southerly aspects that had burned intensely in both 1901 and 1973. More northerly aspects were also dominated by brush fields, but with a greater percentage of deerbrush ceanothus, Pacific madrone, and some naturally regenerated Douglas-fir. Conifer stocking was low to nonexistent throughout most of these areas. Regions that did not burn in the 1973 Hillview fire were largely dominated by extremely dense stands of noncommercial and small merchantable Douglas-fir poles. Overly dense tree stands resulted in mortality caused by bark beetles affecting both ponderosa pine and Douglas-fir, adding to the potential and ultimate severity of wildfire.

Most of the property is located on moderate to steep topography with slopes of 35 to 75 percent, another factor that can contribute to intense wildfire behavior (remember the fire behavior triangle: fuel, weather, topography). The property is underlain by highly erosive, coarse-grained, decomposed granitic soils. In both 1974 and 1997, major storms produced flooding and sediment delivery to houses along Hamilton Creek in Ashland, a mile below the Epstein property. A wildfire can accentuate erosion problems on these soils when the vegetation is killed and soils are exposed.



Max Bennett, Oregon State University; Marty Main, Small Woodland Services.

Figure 23. Treatment map showing types and dates of treatments on the Epstein property (not all treatment dates shown).

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Figure 24. Stand after thinning. Tree thinning made the Epsteins' stands more fire resistant by increasing the distance to the base of tree crowns, by spacing out tree crowns, and by retaining larger trees with thicker bark. Thinned tree tops and limbs were piled and burned to reduce surface fuels.

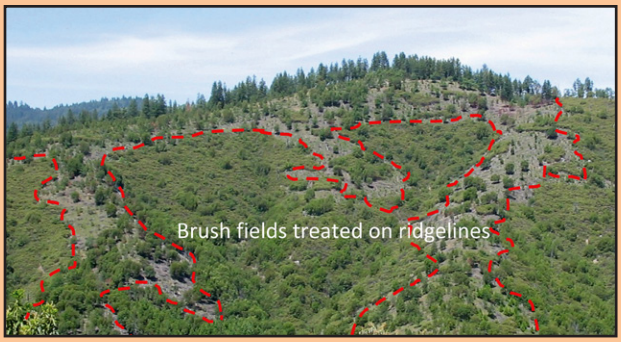

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Figure 25. Brush field treatment. Treatments involved brushing, piling, and burning resulting slash, then planting with conifers, vegetation control, and pruning. The objective is to shift vegetation from wildfire-prone brush fields to more resistant conifer forests in strategic locations such as ridgelines.

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Figures 26a and 26b. (a) Before and (b) after noncommercial thinning, release, and slash treatment. Larger material was used for posts or sold as firewood. Remaining slash was piled and burned.

Forest management and fuel modification

Although the Epsteins originally intended to maintain their property as a forest reserve with little or no management, they soon realized that doing nothing was perhaps the least desirable of a host of management choices. In 1988 they began implementing forest management activities with the primary goal of reducing both the likelihood of fire ignition and the potential for high-intensity fire behavior. This shift in understanding was the result of the realization that almost all the values of importance to the Epsteins, if not the entire Ashland wildland-urban interface area, would be negatively affected by another large, high-severity wildfire.

The Epsteins hired a consulting forester to help them formulate and implement their plan as they did not have the experience, skill, or equipment to get it done. The consulting forester guided the Epsteins through several management activities to achieve their goals. They included the following:

Reducing ignition risk

Fire ignition risk was addressed through ongoing work with the public to reduce illegal trespass. Instead, the Epsteins offered to maintain important trail access through one highly used and carefully monitored portion of the property.

Working with neighbors

From 1990 to 1995, Dr. Epstein was involved in the Hamilton Creek Coordinated Resource Management Plan, which provided one of the first attempts at developing coordinated, multiresource management plans across mixed ownerships. Fire management planning among neighbors at the watershed and landscape level was an important outgrowth of that process.

Developing a safe homesite

The Epsteins live on their property. Protecting their home was a primary goal. The home is a model of fire-safe building construction and was carefully located to minimize potential impacts from wildfire (Figure 23, green area). Road access was developed and/or upgraded to provide fire truck access across the Hamilton Creek drainage.

Prioritizing ridgelines and other key topographic locations for treatment

Places with topographical advantages for wildfire suppression (for example, ridgelines) were addressed first. These are important locations to maintain more open tree and vegetation conditions that could be utilized in a wildfire for fire retardant drops, firefighter access, anchor points for back-burning, and other fire suppression techniques. Areas that could be easily treated to reduce fuels and could also tie into vegetation and fuel reduction areas on neighboring parcels were also prioritized.

Creating more fire-resistant forests

Specific vegetation and fuel reduction prescriptions varied with the diversity of vegetation and fuel types on the property. Brush fields that posed a significant risk were cleared, creating a mosaic of openings of various shapes and sizes (Figure 23, yellow areas). Brush field treatments were located on ridgelines and other topographically favorable locations (Figure 25). Approximately 20 acres were cleared by dozers on gentle, non-erosive sites and 80 acres by hand on steeper slopes. All brush slash was piled and burned during winter and early spring. More than 25,000 conifer seedlings have been planted with the objective of shifting the vegetation away from wildfire-prone brush fields to more

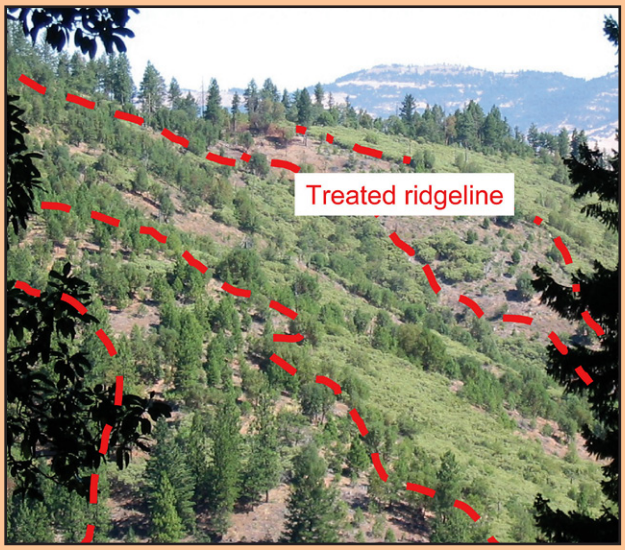

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Figure 27. Fire-prone vegetation at the Epsteins', such as brush fields and dense stands of trees, was modified by breaking up continuous layers of fuels which could sustain and spread a high-severity wildfire. Not every acre could be treated, so priority went to ridgelines, roadsides, and other strategic locations.

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Figure 28. The Epsteins worked to aggressively utilize small-diameter material to reduce fuel that would otherwise be left in the woods as an added fire hazard. Over 500 cords of firewood were sold, as well as many posts and poles for fencing and other products.

fire-resistant conifer forests. Ongoing control of re-invading competing vegetation has been a major thrust of the project, not only to insure survival and growth of the planted seedlings, but to maintain reduced fuel loads in these strategically important fuel reduction zones.

Pruning has been used to increase the height of tree crowns above the surface fuels, to reduce the potential for crown fire. Young conifer plantations were pre-commercially thinned to a wider spacing and pruned to increase the height of the tree crowns. Grass was seeded to discourage brush field development. These activities have maintained effective fuel reduction zones in these locations.

Reducing stand density

More than 175 acres have been noncommercially thinned on the Epstein property (Figure 23, purple areas; Figures 26a and 26b) to reduce stand densities, improve growth and vigor of the remaining trees, increase height of the tree crowns by removing intermediate and suppressed trees, and eliminate ladder fuels. In the absence of thinning in this area of southern Oregon, considerable bark beetle–related mortality can occur when stands are too dense, often killing entire stands and subsequently creating more fire-prone conditions.

Reducing fuel loads

The key to the long-term success of this sequence of management actions from a wildfire management perspective has been the aggressive utilization of thinning and brushing slash. For example, more than 500 cords of firewood have been sold from this slash, as well as numerous posts and fence rails. Additional slash has been piled and burned. In one key location (Figure 23, red area), 10 acres were underburned following thinning and firewood cutting to further reduce fuels.

Using timber harvests as a fire management tool

Timber harvesting has been used as a proactive fire management tool. As stands have grown and matured, thinning has produced higher-value logs rather than poles and firewood as a by-product of the forest restoration activities. Ongoing salvage of dead and dying trees caused by bark beetles has also provided income to help offset the costs of creating a more fire-defensible property. Snags have been retained for wildlife habitat in areas that are less important from a wildfire management perspective. Merchantable Douglas-fir trees heavily infected with dwarf mistletoe have been targeted for removal, as the tree's response to this parasite creates dense accumulations of foliage, known as witches'-broom, that can rapidly allow a surface fire to

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Figure 29. Piling and burning was the method used most often at the Epsteins' to reduce surface fuels generated in thinning and brushing. Extreme care was taken to minimize the risk of escaped burns or *holdover fires*.

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Figure 30. After careful consideration, the Epsteins chose to use prescribed underburning on a small area of the property. A burn plan was developed and executed by an experienced professional forester, and the Oregon Department of Forestry was involved throughout the process.

become a crown fire. However, these brooms also have important wildlife habitat values and are, like snags, retained in areas where they are less likely to spread the mistletoe or contribute to elevated fire behavior (for example, at low spots in the topography, particularly along draws and in riparian habitats). In some cases, mistletoe brooms and infected branches have been removed by climbing and pruning.

Six different harvests have occurred on the Epstein property in the past 17 years, each carefully planned and applied to accomplish multiple objectives, including reducing the risk of wildfire (Figure 23, blue areas). Logging systems have included horses, farm tractor, track crawler (dozer), rubber-tired skidder, small feller/processor with a cut-to-length head, and helicopter logging. In virtually all situations, retention of a well-stocked stand of vigorous larger trees (by "thinning from below") has been a primary objective. As these stands have grown, trees have developed larger diameters, thicker bark, and higher crowns, and thus increased fire resistance.

Work Implementation

Almost all of the work on the Epstein property has been completed under contract, primarily with a local forestry consulting and contracting company that oversaw and implemented forest management activities. Logging has also been contracted with local operators, overseen and administered by the consulting firm. Dr. Epstein, who lives on the property, has been intimately involved in management decision making, and actively participates through regular monitoring and recreational use of the property. Management costs have been paid by four primary sources: (1) revenue from timber sales; (2) revenue from aggressive marketing of traditionally noncommercial by-products, most notably firewood and posts, poles, and rails; (3) government cost-share assistance for noncommercial activities through various programs available to small woodland owners; and (4) tax credits and careful income tax planning. To date, income has offset management costs, while the size of the investment (timber volume) has increased considerably and risk to that investment (fire and insect-related damage) has been substantially reduced.

Summary

With the assistance of a consulting forester and clear management goals, the Epsteins were able to reduce fire risk around their home, create strategic fuelbreaks, improve the health and vigor of their timber, and establish new forests on their property. The property is now in a condition where it will continue to increase in monetary value from timber growth, as well as in ecological value.

Ultimately, the Epsteins' objective is to continue to manage their property to create more mature forest conditions. This will provide opportunities to reduce the risk of wildfire and increase the ease of control should their property be threatened by fire. As the landscape becomes more fire resistant, the Epsteins hope to increase the use of prescribed underburning, and to restore fire to its historic role. Refer to Appendix C for two other case study examples of fuel reduction.