CALIFORNIA FOREST STEWARDSHIP PROGRAM

Forestland Steward

SUMMER 2015

Fire behavior: what's going on?

Inside

Photo: FEMA

Forestland Steward

Forestland Steward is a joint project of the CA Dept of Forestry and Fire Protection (CAL FIRE), Placer County Resource Conservation District, UC Cooperative Extension, and USDA Forest Service to provide information on the stewardship of private forestlands in California.

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The ideas contained in this newsletter are meant as general information and opinion, not management prescription. Consult a Registered Professional Forester or a qualified technical advisor (*see page 10*) for management advice specific to your needs.

Is fire behavior changing?

There's no doubt about it, we're seeing a definite change in California fire behavior. Wildfires are burning more intensively, more frequently, and over larger areas. The fire season is longer and extreme weather occurs more often. All this results in more opportunities for fire to start and spread.

What's going on?

There are many pieces to this puzzle, but the two major contributors to changing fire behavior are fire suppression and climate change.

We have successfully prevented and suppressed fire for over 100 years, resulting in overgrown and overstocked forests in California. Our forests are loaded with flammable biomass and there's no easy way to remove it.

Photo: NPS

Before fires were so effectively suppressed, natural forest ecosystems burned frequently enough to prevent large-scale accumulation of excess fuels. With less fuel, fires tended to burn more in the low- to moderate-intensity range. Now when forests burn—as they inevitably will—the fires are more likely to burn hot and large, like the recent King and Rim fires.

In addition, the climate is changing and warming. Not only are we in the fourth year of drought, warmer temperatures have decreased snowpack storage to virtually zero so there is less water available in the summer months.

Bottom line: forests throughout the state are tinder dry and it doesn't take much to ignite them.

What can you do?

It's very important to understand how fire behaves in order to predict where it will occur, how it will spread, its intensity, direction, and other parameters. Firefighters need a deep understanding of this for their very survival. Landowners, also, need to understand fire behavior to make good forest management decisions about risks and solutions.

As you read this newsletter, please think about these issues in the context of your home, your forest, your community, and the landscape. All of these need your attention.

Weather patterns are a major influence on fire behavior (see *page 4*). During the summer and times of high fire danger, pay attention to current weather conditions. Adapt your activities during Red Flag Warnings (see *page 8*) to avoid operations that could ignite the forest (see *page 12*).

In the off-season, treat the excess fuels in your forest (see *page 9*). Explore the possibility of reintroducing fire into your forest (see *pages 3&9*). Keep up with the research (see *page 10*) to learn more about treatment options and ideas for creating a healthier and more resilient forest.

Good fires and bad

Note that there is a paradox in our discussion of fire. On the one hand we know that fire is necessary, beneficial, inevitable (see *page 3*). On the other hand it can be destructive, uncontrollable, scary. How do we reconcile these two faces of fire?

It's a matter of context. Fire can be good, unless it threatens homes and other values. Fire in wilderness areas is generally beneficial to the ecosystem, but fire in the WUI (wildland-urban interface) must be controlled because it often threatens public health and safety.

In this issue of *Forestland Steward* we will discuss both aspects: the important benefits we want to nurture and enhance, and the steps necessary to protect lives and property from fire.

Find assistance

There is a lot to consider but you don't have to do it alone. Technical and financial assistance are available (see *page 10*). Contact your local Fire Safe Council, CAL FIRE unit, or UC Extension specialists, all of whom are there to help keep your family safe and your forest healthy.

Healthy forests need fire

Despite its bad reputation, fire is absolutely necessary to most California forests. It is one of the major factors that shape and define our forests.

The benefits of fire are immense. Fire helps maintain biodiversity, stimulates fire-adapted trees and plants to germinate, creates a variety of habitats for wildlife, cleans up accumulated fuels, thins the forest, kills pests and pathogens, returns nutrients to the soil, improves forest health… No wonder lack of fire causes such disruption in the forest ecosystem!

Most fires burn in a complex manner, creating burn patches of varying sizes and intensity. This opens up gaps in the forest canopy, allowing light in for plants to establish, especially shade-intolerant species that can't grow in overcrowded closed-canopy conditions. It encourages heterogeneity by creating a variety of habitats and microhabitats. Many species of wildlife thrive after fire creates conditions that increase forage.

Fire cleans up the excess fuels in the forest. It generally clears the forest floor of ground fuels and removes small seedlings, dead plant material, and other fuels. This releases nutrients from burned vegetation to the soil to support new growth. Fire also kills pathogens and insects in the trees and soil.

Fire can help prevent larger conflagrations. After a fire, there is generally less fuel in the forest to burn. Frequent burns can decrease the risk of catastrophic wildfire.

Fire can also increase the water available to individual trees and streams by decreasing the number of plants that compete for that water.

Making friends with fire

If fire is a friend of forests, what can we do to improve the relationship?

First of all, instead of trying to stop wildfires from occurring, we can focus on reducing the damage from fire. One way is to make forests more resilient so they can burn and recover quickly. Another is to find opportunities to safely introduce fire into the forest ecosystem.

We not only need to start looking for ways to allow fires to burn, we need to increase the number of fires. Surprisingly, California forests have a fire deficit; there are far fewer fires now than in historical times.

Prescribed burns are one way to put more fire in the forest. These highly controlled fires burn under very specific conditions, generally with low or moderate intensity. Prescribed burns are the least expensive type of fuel treatment, cheaper than mechanical treatments and much cheaper than wildfire.

However, there are some serious obstacles to using prescribed fire. Because they are so carefully controlled, there are limited opportunities for implementing burns. Liability concerns are a huge roadblock, as are air quality constraints. Finally, fear of fire by the general public makes prescribed fires more difficult to accomplish.

Another option is to let fires burn, managing them for their resource benefits, rather than putting them out. It is possible to manage a fire by keeping a close eye on it and controlling it if it gets too close to areas where it's not wanted. Realistically, this can only be during low to moderate burning conditions and in areas away from the WUI.

In those areas where fire isn't feasible, it may be possible to get many of the same benefits (though not all) through mechanical treatments.

Creating safer healthier forests will require working with fire, as well as all the other tools in our management toolbox.

Fire maintains biodiversity, stimulates plant germination, creates habitat for wildlife, cleans up fuels, thins the forest, kills pests, returns nutrients to the soil, improves forest health…

Photo: Eamon Engber, Redwood NP Fire Ecologist

Native lupine tends to have showy displays of flowers two years after prescribed fire.

Photo: Lenya Quinn-Davidson

Prescribed fire in Whiskeytown National Recreation Area during the Fall 2013 TREX (training exchange). Ponderosa pine litter is highly flammable, demonstrating the species' adaptation to frequent fire.

Fire Vocabulary

Crowning—active fire movement through the tree canopy.

Extreme Fire Behavior—fire that precludes methods of direct control.

Extreme Fire Weather—high temperatures, low humidity, low fuel moisture, and high winds that can lead to extreme fire behavior.

Fire Behavior—rate of spread (in feet/hour) and intensity.

Fire Duration—rate of spread plus smoldering time.

Fire Ecology—the study of fire in the context of its environment.

Fire Frequency—average number of years between fires at a specific location.

Fire Intensity—amount of energy or heat released; temperature and flame length.

Fire Regime—frequency, extent, intensity, severity, and seasonality of fires within an ecosystem.

Fire Severity— degree to which a site has been altered by fire; postfire appearance of soil, litter, vegetation, or other resource of interest; proportion of overstory trees killed.

Fire Weather Outlook—air temperature, relative humidity, precipitation, wind conditions.

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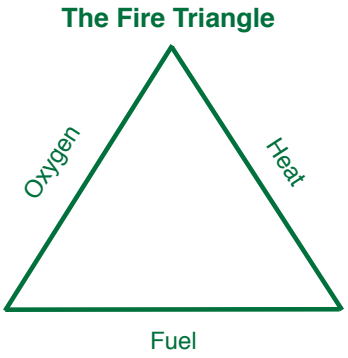
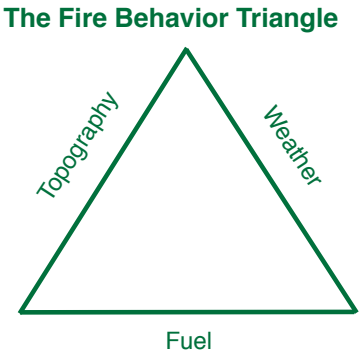
What is fire behavior?





Simply put, fire behavior is the manner in which a fire reacts to the influences of fuel, weather, and topography. But that's not to say it's simple.

Fire science is extremely technical with a language all its own. You'll need to understand some of that vocabulary and science to give you a framework for management decisions. But for now, let's just start with the basics.

Tale of two triangles

The Fire Triangle. A fire needs three things to burn: oxygen, heat, and fuel. Take away any one of these and there is no fire. Firefighters rely on this triangle. They either smother the fire to take away its oxygen, cut off the fuel supply, or cool it below the ignition point. For example, when firefighters create a fire line down to mineral soil they are removing the combustible surface fuels. Fire retardants both cool the fire and smother it.

The Fire Behavior Triangle. The fire behavior triangle also involves three factors: fuel, weather, and topography. These determine a fire's magnitude, direction, and intensity of spread.

Fires behave in various ways, and some of these have names. A fire that spreads slowly with low intensity is called a *creeping fire*. A rapidly spreading, low-intensity fire is *running*. A fire that spreads rapidly with low intensity is *flashy*. And a high-intensity fire is often referred to as a *conflagration* or *firestorm*.

The fire behavior triangle offers insights into changing fire behavior and possible solutions. We are currently seeing major changes in two sides of the triangle: fuel loads and weather patterns. Since there is little we can do to change weather or topography, we have to focus on the fuel side of the triangle. There are many ways to manipulate fuel. We can remove it, burn it, adjust its density, modify its arrangement, masticate it, and more.

Fire regime change

Natural fires generally occur at a frequency, intensity, severity, and seasonality that is characteristic of the location. This long-term pattern is known as the *fire regime*. Fire regime is specific to the ecosystem and varies by forest characteristics including topography, species composition, climate, elevation, aspect, and other factors. The fire regime in the mixed conifer forest, for example, is very different from that of the redwood forest.

Changes in the fire regime can have profound effects on the forest ecosystem. Years of excluding fire from our forests have left them overcrowded, stressed, and with altered species composition. Both vegetation and wildlife are affected.

Frequency. Also known as the *fire return interval*, fire frequency is the average number of years between fires. For example, before suppression, fire occurred in the mixed conifer on average every 10 years. The frequent burns kept fuels from accumulating on the ground and removed excess growth so fires tended to be low to moderate in intensity. Now, after decades without fire, these forests have large accumulations of ground fuel, plus dense living biomass. Lack of fire has changed many characteristics of the ecosystem.

Intensity and Severity. *Fire intensity* is a measure of how hot a fire burns. *Fire severity* is more difficult to quantify; it refers to the fire's effects on vegetation, litter, soils, etc. Fire severity depends not only on the fire's intensity, but also on its duration. A long-lasting creeping fire may actually transfer more heat and could have a more severe effect on soil and vegetation than a fast-moving intense fire.

Generally speaking, *low-intensity fires* do not burn into the forest canopy. They clear out the

(*continued next page*)

underbrush, thin out young trees, and reduce the fuel accumulated on the forest floor. *Moderate-intensity fires* burn into the forest canopy, but typically don't kill the large trees. *High-intensity fires* consume all the ground cover and much of the forest canopy.

All fires are complex. Due to differences in topography, weather, and fuels, fires burn in a mosaic of low-, moderate-, and high-intensity areas. Historically, in mixed-conifer forests only a small percentage of a fire burned at high intensity. Recent wildfires have been a lot hotter: 40% of the Rim Fire burned at high intensity and 50% of the King Fire.

Seasonality. *Fire season* is the period when fires are expected to occur, based on knowledge of long-term climate patterns. This is when fire agencies gear up to fight fires.

With long-term patterns changing, short-term weather conditions are less predictable. Due to the incendiary condition of California forests right now, large fires can occur almost any time of year.

The typical fire season in California is from May to November, with the most intense fires in late September and October (although intense fires can occur in July and August too). But fire season has been expanding. It is now about 70 days longer than 40 years ago.

Invasive species. Nonnative invasive species can change the fire regime of the plant communities they invade. For example, Scotch broom and cheatgrass are extremely flammable and can increase the fire frequency in an ecosystem. This can make it more difficult for native plants—which are adapted to a specific local fire regime—to survive and reproduce. Identifying and removing invasive species can help maintain healthy forest ecosystems.

Fire Types

Fires are classified by where in the fuel strata they burn: surface fires, understory fires, and crown fires. *Surface fires* are the most common. Depending on the fuels, weather, and topography, these fires can be low to high intensity. *Understory fires* have flame lengths up to 10 feet. They consume surface fuels, small trees, brush, and lower branches of overstory trees. *Crown fires* reach into the crowns of trees with flame lengths more than 10 feet. Their behavior is often unpredictable. Crown fires are the most difficult to control as they can spread quickly from crown to crown with high intensity. *Torching* is limited to burning the crown of a single tree.

Fuel

Fuel is the material that burns. It is characterized by its size, moisture content, flammability, and location.

Changes in the moisture content of dead and downed wood is used to predict fire behavior

(*continued next page*)

Illustration courtesy Debra Davis

(cont. from page 4)

Fire Whirls—upward-spinning columns of air that carry flames, smoke, and embers aloft; whirls often form in heavy fuels on the downwind side of ridges; in extreme conditions can be powerful enough to twist off entire trees.

Fuel Moisture—moisture content of vegetation.

Foehn Wind—dry, warm downslope wind that occurs in the downwind side of a mountain range.

Ladder Fuels—fuels that connect surface fuels to crown fuels.

Santa Ana Wind—strong, extremely dry downslope winds that blow through mountain passes in southern California.

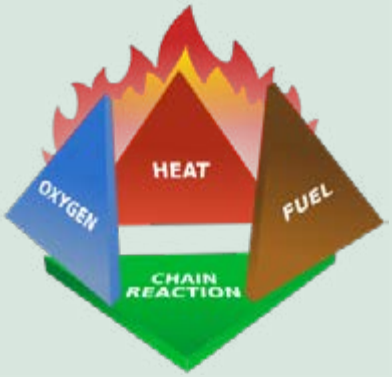
Spotting—firebrands (glowing embers) lofted up and ahead of the main fire front, igniting multiple spot fires that then feed back into the main fire front to create extreme and dangerous fire conditions.

Torching—movement of a surface fire up into the tree crown.

—more fire definitions at the Glossary of Wildland Fire Terminology (gacc.nifc.gov/nrcc/dc/idgvc/dispatchforms/glossary.pdf) and NOAA's Fire Terms and Definitions (www.erh.noaa.gov/gyx/firewx_definitions.html)

Be aware: factors that can affect fire behavior

Topographic Factors



Chimneys, chutes, gullies, and canyons: Topographical depressions, no matter how slight, can draw the leading edge of the fire. Convection currents of heated gases travel ahead of the fire.

Saddles: Saddles are at the top of canyons. Running fires are drawn to saddles. Expect more fire intensity here than anywhere else along the ridge-top.

Canyon mouths: During foehn (or Santa Ana) wind-driven fires, fire behavior at the low end of canyons is similar to that of the saddles during slope-driven fires (*see above*). Expect the greatest intensity there.

Aspect: Always note the aspect and time of day to help predict potential burning conditions for the daylight hours.

Fuel Factors

Flashy fuels: expect spot fires with sudden ignition and a rapid rate of spread.

Low dead fuel moisture: Expect greater fire intensity.

Low live fuel moisture: Contributes to faster spread and greater intensity.

Shrub and timber fuels: May create extreme fire intensity.

Weather Factors

Winds: Expect sudden changes in slope and valley winds from topographic features or fire behavior (e.g. eddies, roll eddies, fire whirls).

Unstable air: Visible signs of unstable air may portend the possibility of large fire whirls and extreme fire behavior.

Temperature and moisture: Rising temperature, dropping relative humidity (RH), and dropping fine fuel moisture (FFM) may increase spot fires and rapid rates of spread.

Frontal systems and thunderstorms: As they form or approach, these systems may set the stage for sudden and extreme fire behavior changes.

Alignment of Forces

Any one of the above factors can lead to a sudden change in fire behavior that can catch you off guard. When your position includes several of these, the potential can be great.

—adapted from CA Professional Firefighters, www.cpf.org/go/cpf/health-and-safety/wildland-firefighter-safety/fire-behavior-factors/

changes throughout the day. For that purpose, dead fuels are grouped into four size classes: 1 hour = up to 1/4 inch in diameter, 10 hour = 1/4 to 1 inch diameter, 100 hour = 1 to 3 inches diameter, and 1000 hour = 3 to 6 inches diameter.

Moisture content is critical to how easily a fire burns. Larger fuels take longer to absorb or lose moisture. Drier fuel fires generally spread faster, are more intense, and are consumed faster. Right now, in year 4 of drought, moisture is at an all-time low and our forests are primed to burn.

Weather

Weather is one of the major determinants of fire behavior. *Weather* is the day-to-day condition of precipitation, relative humidity, etc. *Climate* is the long-term average of daily weather conditions. With a warming climate, weather patterns have become more unpredictable, with more periods of extreme and uncharacteristic weather.

Extreme Fire Behavior

Extreme fire behavior includes one or more of the following: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, and strong convection columns. Under extreme conditions, fire behavior becomes difficult to predict because the fires can often create their own weather and behave in erratic, sometimes dangerous, ways. These fires are extremely difficult to control.

Fuels ignite in two ways: by lightning and by human activity. We have no control over lightning, but we can reduce human-caused ignitions, including equipment use, vehicles, smoking, campfires, power lines, and arson.

Photo: Lenya Quinn-Davidson

Redwood National Park during the Fall 2013 TREX. Prescribed fire is used to limit conifer encroachment into oak woodlands, conserve biodiversity, and maintain natural processes.

The path from drought to firestorm

The current drought is taking a grave toll on California forests. A recent survey by the USDA Forest Service in the early part of the season found 12.5 million recently dead trees. This number is sure to rise.

Trees need water

Drought has far-reaching effects on trees. The physiological processes necessary for their healthy functioning depend on water. Each tree species has its own requirements, but even drought-tolerant trees, with adaptations that allow them to function in low-water conditions, have limits.

Trees take up water containing dissolved nutrients from the soil through their roots and move it into their leaves, where the water combines with carbon dioxide and sunlight through photosynthesis to make energy (in the form of carbohydrates). The water, along with oxygen (a byproduct of photosynthesis), then moves out of the tree through holes in the leaves (stomata).

Trees lose a massive amount of water each day through this process, called *transpiration*. Water also evaporates from the soil. The combined water loss from leaves and soil is known as *evapotranspiration*.

Evapotranspiration is influenced by weather; warm and windy conditions increase water loss. Under current conditions—insufficient water in the soil, warmer temperatures that increase evapotranspiration, and a meager snowpack resulting in less water stored for later in the season—all the trees in the forest are water-stressed.

Overcrowded and thirsty

The fact that our forests are overcrowded plays a major role in their susceptibility to pests and fire. Dense conditions require trees to compete for the limited water in the soil. There is just not enough to go around.

Without enough water, trees may have to shut down physiological processes to survive. One of the first functions to go is their defenses.

Pests attack

Stressed trees are vulnerable to attack. A tree's primary defense is the production of pitch that prevents insects from entering the tree. Pitch production requires water, so water-stressed trees are less able to expel intruders.

It's important to note that insects, fungi, and other pathogens are a natural and desirable part of the forest ecosystem. They play many vital roles, including weeding out weak and dying trees, breaking down and recycling plant and animal material, and serving as food for forest wildlife.

In normal times, bark beetles exist in low numbers and are largely invisible. But when large numbers of trees become water-stressed and vulnerable, the beetle populations grow quickly. If there are enough insects, they can even overwhelm the defenses of healthy trees.

Dead trees

When trees die, they add to the already excessive fuel loads in the forest. Dead trees ignite faster and burn hotter than living trees. They torch quickly, with fire moving into the crown where it can jump to nearby trees. In overcrowded conditions, there are nearly always trees or fuel ladders nearby to spread the fire.

Unprecedented

The word that comes up repeatedly is "unprecedented." Drought, overcrowding, pests, dead trees, and warm weather have created conditions far outside the norm. It's no surprise that forests are more volatile and severe fires more common than in the past.

California forests are experiencing unprecedented threats that require new approaches. Creativity and sound adaptive management, combined with solid research, are the keys to protecting our forests.

Resources

Ask a Tree Health/ Pest Specialist
Expert advice on what is affecting your forest trees
caforestpestcouncil.org/ask-a-tree-health-pest-specialist/

Forest and Tree Health in a Time of Drought
ucanr.edu/sites/forestry/?blogpost=17982&blogasset=32531

Bark beetles attack during drought

Lack of water during drought impacts trees' natural defenses. Native bark beetles can take advantage of this to attack trees and increase their populations, resulting in epidemic numbers of trees killed.

1 Bark beetles are very tiny hard-bodied insects that bore into trees. They summon others through the release of pheromones.

Don Owen, CAL FIRE, Bugwood.org

Red turpentine beetle

William M. Ciesla, Bugwood.org

Beetle galleries

Whitney Cranshaw, CSU, Bugwood.org

Pitching out beetles

2 Trees have an excellent defense against beetle attack: they release pitch that can drown the insects and push them out. However, without adequate water, trees can't produce enough pitch to protect from mass attacks.

3 When beetles feed on the inner bark, they create galleries where they lay their eggs. Larva hatch and create more galleries, which can block nutrient and water transport, leading to tree death.

4 Eventually, the tree may die from the beetle attacks. Dead trees make the forest more prone to fire.

Paul Bolstad, U of Minn, Bugwood.org

Dead trees add to the fuel load in the forest

Red Flag Warnings and Fire Weather Watches

Watch out for extreme fire weather

Find the California map for Red Flag Warnings and Fire Weather Watches: *calfire.ca.gov/communications/communications_firesafety_redflagwarning.php*

Protect yourself and your forest by becoming more aware of fire weather. During extreme fire weather do all you can to prevent ignitions. This includes modifying your operations (*see page 12*) and other commonsense actions.

The National Weather Service issues Red Flag Warnings and Fire Weather Watches to announce the onset, or possible onset, of critical weather and dry conditions that could lead to rapid or dramatic increases in wildfire activity.

A Red Flag Warning is issued for weather events that could result in extreme fire behavior within 24 hours. This is the highest level of alert.

A Fire Weather Watch is issued when weather conditions could exist in the next 12–72 hours. A Fire Weather Watch is one level below a Red Flag Warning, but fire danger is still high.

During Warnings and Watches extreme caution is urged by all residents; a simple spark can cause a major wildfire.

Weather patterns that can cause a Watch or Warning include low relative humidity, strong winds, dry fuels, the possibility of dry lightning strikes, or any combination of these.

Find the California map for Warnings and Watches at *calfire.ca.gov/communications/communications_firesafety_redflagwarning.php.*

New regulations facilitate removal of dead and dying trees

Aerial surveys of southern California and the southern Sierra found some bad news: approximately 12.5 million trees are dead from effects of the drought. That's 4 times the tree die-off in 2014 when 3.3 million trees were estimated dead throughout the state, which was double the 2013 mortality rates.

To address this alarming trend, the California Board of Forestry and Fire Protection has adopted an emergency regulation to allow removal of dead and dying trees (defined as trees with 50 percent or more of the crown foliage dead or fading in color, or with evidence of successful bark beetle attack around the trunk).

This regulation will allow forest landowners and Registered Professional Foresters (RPFs) to apply for an exemption to cut and remove dead and dying trees of any size without a timber harvest plan and respond more quickly to threats from hazardous trees and wildfires.

According to the Board of Forestry, "These regulations will help to immediately facilitate the cutting and removal of dead and dying trees, which will reduce the risk of large, damaging wildfires; decrease home and structure losses; enhance firefighter and public safety; and reduce fire suppression costs.."

Areas to be treated larger than 20 acres across an ownership require an RPF to prepare, sign, and submit an exemption form to CAL FIRE. Areas less than 20 acres do not require an RPF, but can be submitted by the landowner, timber owner, Licensed Timber Operator, or an RPF.

The Drought Mortality Exemption form can be found at *calfire.ca.gov/resource_mgt/resource_mgt_forestpractice_harvestingforms.php.*

What can you do? Looking for solutions

Wildfire is a huge threat to all of your careful plans for your forest. But what can you do? This is an opportunity to use your knowledge of fire and fire behavior to increase the health and resilience of your forest.

Look at the topography of your land and the surrounding landscape. Think about where a fire would most likely enter and how it would move through your forest. What are the weather patterns? What kinds of fire behaviors would you expect? Identify the most vulnerable areas. Try to find information about the fire history of your property and area. It may be useful to gather all this information into a Fire Plan.

Then think about steps you can take to reduce vulnerability. Is it possible or desirable to introduce fire onto your property? What about mechanical treatments?

You can reduce and rearrange fuels to decrease the threat of catastrophic fire. Remove fuel ladders that would lead a fire into the crowns of trees. Break up the fuel continuity so a fire can't travel far. Separate trees or groups of trees to prevent a crown fire from jumping through the forest. Create buffers around important areas. Make your forest resilient so that it can survive and recover quickly after a fire.

Of course, you will need to create a buffer around your home and other structures. It's called defensible space and it's required by law. Learn how to design defensible space (*www.fire.ca.gov/communications/communications_firesafety_100feet.php*) and how to protect your home (*www.fire.ca.gov/communications/downloads/fact_sheets/Checklist.pdf*).

While you can undertake some projects alone, it may be more effective to work collaboratively with neighbors or your local Fire Safe Council or Resource Conservation District (RCD). Landscape-level projects have advantages; they can be more efficient and funding may be available for larger projects. Consider a prescribed burn, shaded fuel breaks, and strategic placement of fuel breaks that can provide protection on the landscape level.

Don't forget the experts. There are many specialists who are eager to help you find solutions to make your forest more resilient and fire safe. These include your local Fire Safe Council, CAL FIRE unit forester, RPF, UC Cooperative Extension advisor, RCD specialists, and the Prescribed Fire Council.

Photo: Lenya Quinn-Davidson

Private ranch in Trinity County during Fall 2013 TREX. The owner uses prescribed fire to reduce fuels and promote healthy, open stands of pine and oak.

Cost-share for prescribed burns

CAL FIRE may be able to help you get a prescribed burn implemented on your property. If you are eligible, they will take care of the difficult parts: develop the environmental documents and burn prescription, take responsibility for the liability, and implement the burn.

The Vegetation Management Program (VMP) uses prescribed fire and mechanical means to address wildland fire fuel hazards and other resource management issues on State Responsibility Area (SRA) lands. Prescribed fire can mimic natural processes, restore fire to its historic role in wildland ecosystems, and provide significant fire hazard reduction benefits that enhance public and firefighter safety.

Cost-share means that the landowner pays part of the costs, which is based on a ratio of public to private benefit. If the landowner gets very little benefit, the State could pay up to 90% of the cost (but it's usually less).

Get started by contacting the VMP forester at your local CAL FIRE unit office. The forester and battalion chief will go out to your property to see if a burn is considered to be in the public interest. If your goals align with those of the unit, you may be able to enter into a VMP contract.

Note that this program is not solely focused on fire protection. The goals may involve rangeland or wildlife habitat improvement, watershed enhancement, or other benefits, as well as fuel and hazard reduction.

Most burns are done in the fall or spring, although some locations allow for winter burns. Expect the process to take a year, since the archaeological and biological studies can take some time.

CAL FIRE has its own equipment and personnel to do the prepping and burns, which are often used as training classes for firefighters.

The VMP has been in existence since 1982 and has treated an average of approximately 35,000 acres per year since it began.

—calfire.ca.gov/resource_mgt/resource_mgt_vegetation.php

Resources

Fire behavior, treatment, safety

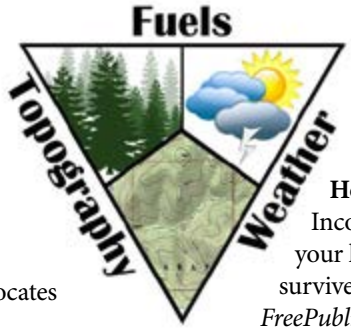
Wildfire is Coming… Are You Ready?

This website is amazing—you could easily spend several hours perusing its pages. *www.readyforwildfire.org/getting_set*

Preparing your family, seniors, disabled *www.readyforwildfire.org/prepare_family*

Current Fire Information *www.readyforwildfire.org/sec.aspx?id=39*

California Fire Consortium provides brief reviews of scientific papers and highlights management implications of the studies. They read the papers so you don't have to. *www.CaFireSci.org*



Prescribed Fire Councils
Prescribed Fire Councils are advocates for prescribed fire. They provide information, training, and events.

- **Northern California Prescribed Fire Council**, *www.norcalrxfirecouncil.org/*
- **Southern Sierra Prescribed Fire Council**, *www.sosierrapfc.org/*

California Fire Safe Council
The website offers information on grants, activities, and a list of local Fire Safe Councils to help you find (or start) your local council. *www.cafiresafecouncil.org/*

Forest Stewardship Series 15: Wildfire and Fuel Management from UC Cooperative Extension. *anrcatalog.ucdavis.edu/pdf/8245.pdf*

UC Cooperative Extension Forestry offers material on home design and retrofitting for wildfire fire safety. *ucanr.edu/sites/forestry/Wildfire/*

Home Landscaping for Fire
Incorporate fire safe concepts into your landscape to help your home survive a wildfire. *anrcatalog.ucdavis.edu/FreePublications/8228.aspx*

Landscaping and Home Design for Fire Defense webinar presentation. *www.cafiresci.org/events-webinars-source/category/landscaping-and-home-design-for-fire-defense*

Home Survival in Wildfire-Prone Areas: Building Materials and Design
Design methods and building materials to help your home survive a wildfire. Free. *anrcatalog.ucdavis.edu/Items/8393.aspx*

Recovering from Wildfire
Learn what to do if a wildfire occurs on your forestland. Free. *anrcatalog.ucdavis.edu/Items/8386.aspx*

Technical Assistance

Many agencies are available to provide technical assistance, referrals, information, education, land management plan assistance, and advice.

California Stewardship Helpline
1-800-738-TREE; ncsaf@mcn.org

California Dept of Forestry & Fire Protection
Stewardship Forester
Jeff Calvert; Jeff.Calvert@fire.ca.gov

Forestry Assistance Specialists
Brook Darley, (Redding) 530-224-1420
Damon Denman (Siskiyou) 530-842-3516
Dave Derby (Butte) 530-872-6334
Adam Frese (Tuolumne/E. Stanislaus) 209-532-7429 x109
Ivan Houser (Lassen) 530-257-4171
Al Klem (Plumas) 530-283-1792
Patrick McDaniel (El Dorado) 530-647-5288
Len Nielson (Mariposa/Madera/Merced) 209-966-3622 x207
Jonathan Pangburn (San Benito/Monterey) 831-333-2600
Alan Peters (San Luis Obispo) 805-543-4244
(Placer/Yuba/Nevada) 530-265-4589 x101
Jim Robbins (Humboldt/Del Norte) 707-726-1251
(Santa Rosa) 707-576-2935
Edwin Simpson (Fresno/King) 559-493-4307
(S. Lake Tahoe) 530-541-1989
Tom Tinsley and/or Patrick McDaniel (Amador) 530-647-5200

California Association of RCDs
916 457-7904; staff@carcd.org

Natural Resources Conservation Service (NRCS)
State Forester; 530-792-5655

UC Cooperative Extension Forest Advisors
Mike De Lasaux (Plumas, Sierra) 530-283-6125; mjdelasaux@ucdavis.edu
Ryan DeSantis (Shasta, Siskiyou, Trinity) Counties; 530-224-4900; rdesantis@ucanr.org
Greg Giusti (Mendocino, Lake) 707-463-4495; gagiusti@ucdavis.edu
Susie Kocher (El Dorado, Amador, Calaveras, Tuolumne) 530-542-2571; sdkocher@ucdavis.edu
Rick Standiford, Specialist 510-643-5428; standifo@berkeley.edu
Bill Stewart, Specialist 510-643-3130, billstewart@berkeley.edu
Yana Valachovic (Humboldt, Del Norte) 707-445-7351; yvala@ucdavis.edu

USDA Forest Service
Jason Ko, Forest Legacy & Stewardship 707-562-8875; jmko@fs.fed.us

Calendar

September 16–17
Second Annual Riparian Management Workshop: Focus on Science Application
Location: Modesto, CA
Hosted by: Pala Band of Mission Indians
Website: ped.palatribe.com

September 23–26
International Plant Propagators Society
Location: Modesto, CA
Website: www.ippswr.org/

September 26–27
CLFA Fall Workshop "Fire on the Mountain"
Location: Auburn, CA
Information: www.clfa.org/wp-content/uploads/2010/08/CLFA_Fall_2015.pdf

September 29–30
Board of Forestry Meeting
Location: Resources Building, Sacramento
Website: bofdata.fire.ca.gov/

October 20–November 1
Nor Cal Prescribed Fire Training Exchange (TREX)
Location: Resources Building, Sacramento
Cost: $200
Contact: Lenya Quinn-Davidson, nwcapfc@gmail.com
Application: www.trexregistration.weebly.com
Note: Application due August 17

October 27–28
Board of Forestry Meeting
Location: Resources Building, Sacramento
Website: bofdata.fire.ca.gov/

October 28–29
Restoring the West Conference
Location: Utah State University
Website: www.restoringthewest.org/

November 12–13
Oregon White Oak and California Black Oak Ecology and Management Symposium
Location: Eureka, CA
Contact: Lenya Quinn-Davidson, lquinndavidson@ucanr.edu
Information: ucanr.edu/sites/forestry/Events/?calitem=295975&g=28858

November 18–21
CARCD Annual Conference "Healthy Forests, Healthy Soils, A Resilient California"
Location: Tenaya Lodge, Yosemite, CA
Information and Registration: www.carcd.org/annual_conference0.aspx

December 8–9
Board of Forestry Meeting
Location: Resources Building, Sacramento
Website: bofdata.fire.ca.gov/

Hazardous Fuels Reduction Demonstrations in central/southern CA

Hazardous fuels reduction demonstrations will be conducted at strategic locations by the USDA Forest Service and partners. Demos are one week in duration and include a demo day (Fridays) for guests to view operations. The primary purpose is to raise awareness about hazardous fuels treatment alternatives and provide up-to-date information on resource impacts, efficiencies, and costs. Both conventional and innovative equipment and techniques will be used.

Dates:
- Oct 9, 2015—Shaver Lake
- Oct 16—Big Bear Lake
- Nov 20—Santa Rosa Indian Reservation

Website: *ucanr.edu/sites/WoodyBiomass/Hazardous_Fuels_Reduction_Demonstration/*
Please register no later than October 1 as space is limited. No cost for demos.
Contact: Tad Mason, TSS Consultants, 916-600-4174; tmason@tssconsultants.com

You Choose: E-version (with links), hard copy (real paper!), or BOTH??

Learn tips and tricks to become a confident and proficient forest steward and keep current on the latest information, funding, and events. Send a note to llitman@pacbell.net and specify whether you wish to receive either the electronic or paper version, or get both.

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email _____

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Fill out this box and send it to CAL FIRE, Forestry Assistance, P.O. Box 944246, Sacramento, CA 94244-2460. Fax: (916) 653-8957; email: Jeff.Calvert@fire.ca.gov. ca.gov. For address changes, please send this box or contact Jeff Calvert via email, standard mail, or fax…be sure to reference Forestland Steward newsletter.

NOTE: For address updates or to make comments or suggestions about this newsletter, please contact Jeff.Calvert@fire.ca.gov. A limited number of extra printed copies may be available. Please send your shipping information and the number of copies you would like to Jeff.Calvert@fire.ca.gov or mail your request directly.

CAL FIRE & Placer County RCD
Forest Stewardship Program
c/o P.O. Box 162644
Sacramento, CA 95816

ADDRESS SERVICE REQUESTED

Equipment Use Safety

Are you doing the right thing the wrong way?

Each year CAL FIRE responds to more than 1,600 fires started by Californians using equipment the wrong way. Whether working to create a defensible space around your home, just mowing the lawn, or pulling your dirt bike over to the side of the road, if you live in a wildland area you need to use all equipment responsibly. Lawn mowers, weedeaters, chain saws, grinders, welders, tractors, and trimmers can all spark a wildland fire. Do your part, the right way, to keep your community fire safe.

Here's how to do it right:

- Do all yard maintenance that requires a gas or electrical motor before 10 a.m., not in the heat of the day or when the wind is blowing.
- Lawn mowers are designed to mow lawns, not dry grass, weeds, or rocks! Never use lawn mowers in dry vegetation; use a weed trimmer.
- Remove rocks in the area before you begin operating any equipment. A rock hidden in grass or weeds is enough to start a fire when struck by a metal blade.
- In wildland areas, spark arresters are required on all portable gasoline powered equipment, including tractors, harvesters, chain saws, weedeaters, mowers, motorcycles, and all terrain vehicles (ATVs).

- Keep the exhaust system, spark arresters, and mower in proper working order and free of carbon buildup. Use the recommended grade of fuel and don't top off.
- Keep the engine free of oil and dust and the mower free of flammable materials.
- In wildland areas a permit may be required for grinding and welding operations, and spark shields may be required on equipment. Be sure to have 10 feet of clearance, a 46" round point shovel, and a backpump water-type fire extinguisher ready to use.
- Hot exhaust pipes and mufflers can start fires you won't even see, until it's too late! Don't pull off into dry grass or brush.
- Have a cell phone nearby; call 911 immediately in case of fire.

—www.fire.ca.gov/communications/downloads/fact_sheets/EquipmentUse.pdf