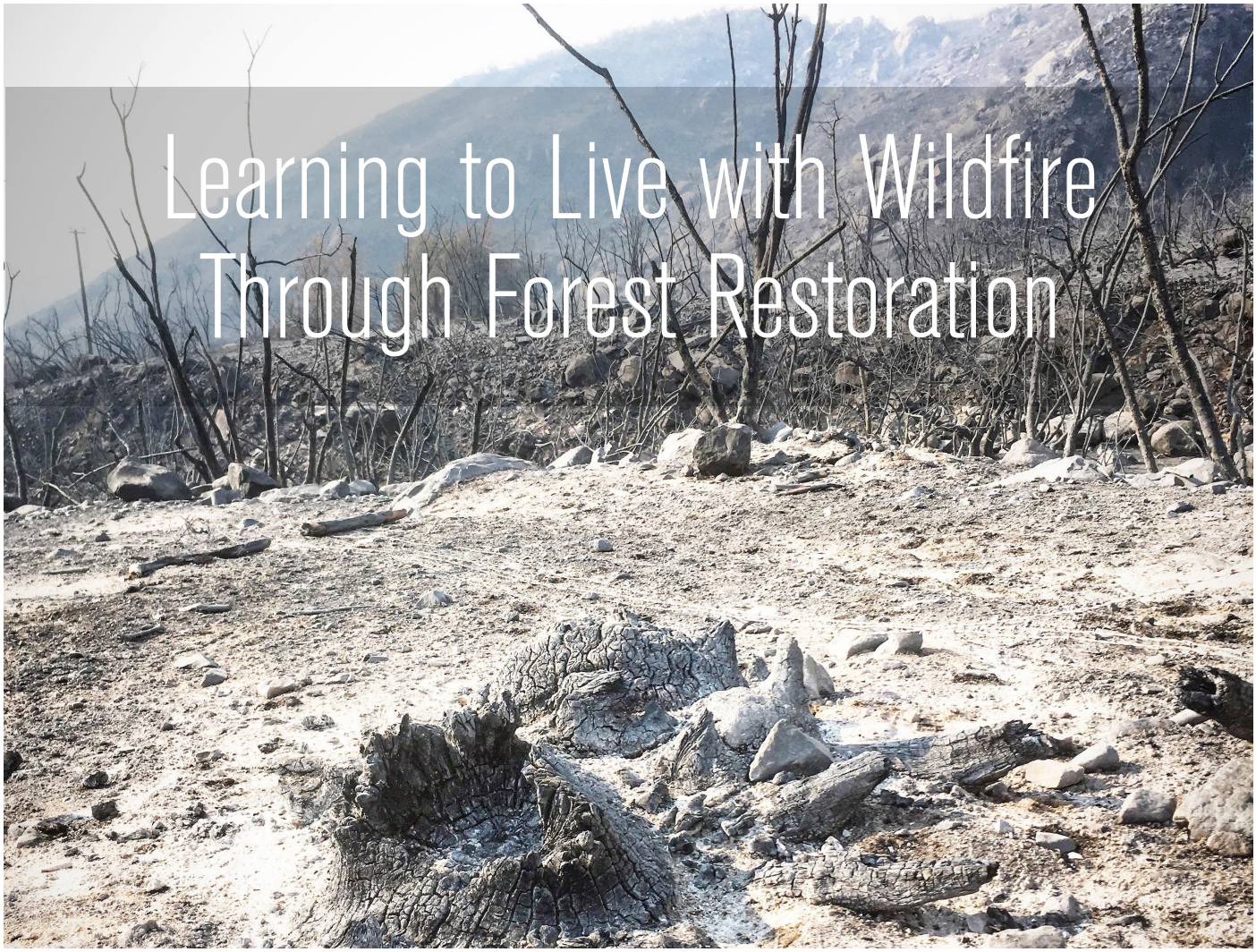
Learning to Live with Wildfire Through Forest Restoration



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Suggestions on how to prepare your home and surrounding forests for wildfire

By Tracy Katelman

I live in California, where coexisting with wildfire is becoming an ever-present, year-round reality, as it is for much of North America. In November of 2017, Red Flag Warnings were in effect for many midwestern states, signaling extreme danger due to low relative humidity, high temperatures, and high winds, creating conditions favorable for severe wildfires. In December, the Thomas Fire became California's largest fire in recorded history. Within 3 weeks, 20 people died from a massive mudflow due to the fire and an extreme rain event. Two months earlier, Sonoma and Napa Counties experienced devastating fires that cost billions of dollars, took 42 lives, and caused incalculable wildlife loss.

The native peoples of these lands were masters at living with and using fire as a tool. Research shows that before Spanish settlement and genocide in the early 1700's, millions of acres burned annually in California, far more than we have seen in our lifetimes. We are now coming off of a 100-year wet period coupled with intensive fire suppression that stopped fire's natural role in removing flashier (very ignitable) fuels. This means California and much of the West is going to be drier with a lot of built-up fuel; in other words, it's ready to burn.

I first became involved in community wildfire preparedness through my work in forest restoration. What we learned in the 1990's was that restoring our native forests and preparing them to survive wildfire are very similar work. The result of intensive logging and fire suppression over the last century has meant that many western conifer forests are very dense

For the dense conifer forests of the West, our goal in restoration for fire and ecosystem resiliency is to create patchiness in the landscape; we want structural diversity to slow down a fire as it moves through the forests. Structural diversity means a mix of ages and sizes of trees. Just like monoculture agriculture is not resilient to pathogens, an even-age, monocrop forest is also more vulnerable.

and not very diverse – neither biologically nor structurally. Our job as land stewards is to reverse these trends and to help the forests be more resilient to climate change.

One of the most important principles in fire-safing a forest is to remove ladder fuels and decrease fuel continuity. Ladder fuels are anything that will allow fire to climb up from the ground into the canopy of the trees. For example, with dry grass near shrubs and trees with low branches, a fire that is moving along the ground can literally climb up the grass into the shrubs and then into the lower branches of the trees and into the tree canopy. Once a fire reaches the canopy, it's much harder to stop.

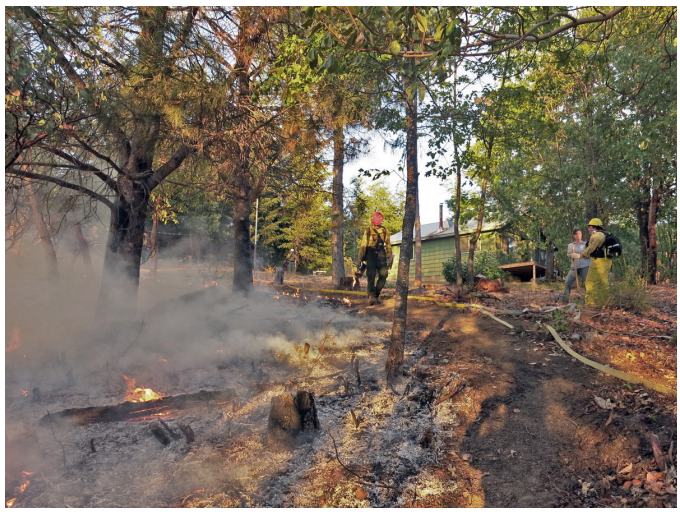
Ladder fuels are an example of vertical fuel continuity. On the other hand, horizontal fuel continuity could be the tops of trees adjacent to a wooden deck that is adjacent to a house with wood siding. If fire gets into the trees, it has an easy pathway to burn directly towards the house. The objective is almost always to break up fuel continuity.

Hence, start by making your home and property fire safe from the house out. The fires in California's Sonoma and Napa Counties in October 2017 showed the importance of starting with preparing homes. Many homes there burned from the inside out, as flying embers being pushed for miles ahead of the fires were sucked into houses through ventilation systems or pushed into small cracks in siding or vents, or anywhere else they could find to land. Another lesson was to not build in areas with a lot of historical fire; check out the fire history for your property through your local fire department.

Therefore, the first step is to make sure there are no gaps anywhere in your structure; think about anywhere a mouse could enter, or even smaller gaps. All vents, openings, chimneys, and cracks should be either caulked or covered with 1/8" metal screen (hardware cloth). The next step is to remove anything flammable within 5 feet of your house. I heard of a home being destroyed in Southern California because someone left a broom against the house and the bristles caught and moved up the handle and created enough heat to ignite the siding. It's the little details that make a difference in your home surviving a wildfire.

Start looking at your structures with the perspective of how they might ignite if an ember landed somewhere on or near them (it's usually not the wall of flame that will ignite it). The best plants to have in your 5' non-flammable zone would be well-watered food crops, such as leafy greens (not woody), in ceramic pots.

Moving out from your home, you'll want to create defensible space, a safe place for firefighters to defend your home. The law in California is 100 feet. Focus on removing ladder fuels and breaking up fuel continuity. Keep plants scattered. Clumps or guilds are good; most importantly, keep it lean and green. Remove all dead material and feed your compost pile. Avoid highly flammable plants near your home; unfortunately that means most aromatic herbs, as the oils are flammable. Have herb gardens at least 30 feet from your house, as well as your firewood, propane tanks,



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Sam Berry works with firefighters to do a controlled burn around his home.

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Fuel reduction and prescribed burns along evacuation routes are critical.

and anything else flammable. Alternatively, your firewood and gas/propane should be in an enclosed building where embers can't enter.

If you have a lot of trees in the first 100' around your home, make sure they are well spaced, and that their canopies are at least 10' from roof and chimneys, and ideally from each other. The further you get from your home, the more you can begin to feather your treatments; meaning the clearing and removing of ladder fuels should be most intense closest to your home and along your ingress/egress/evacuation routes.

As you begin to move away from Home Ignition Zone, or zone 1, around the house, and into the wildlands, it's okay for the forest canopy to be denser. Find out what the natural canopy density is for your native forest. If it's extremely dense, start by removing some of the smaller trees below the main canopy. These are classic fuel ladders that can ignite your biggest and healthiest trees. To meet your forest density goals, take out the weakest, least healthy trees and use them for firewood, building poles, and such.

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In addition to removing ladder fuels and promoting structural diversity, also limb up your trees by removing the lowest branches. Assuming you have trees at least 40' tall, if you can get 12-15' of clearance under your tree canopy, that's a great start. A rule of thumb is to only remove 1/4 to 1/3 of the vertical height of the tree canopy at any one time. You can limb the tree some this year, then come back next year and take a few more branches.

Forest restoration for fire and climate resiliency is both an art and a science. It's both simple and complex. We've

We are learning from our indigenous partners about how to bring prescribed fire (controlled burning) back into our landscape management. Fire plays an important role in many ecosystems. Our predecessors tried to stop it; it's now our job to relearn how to use fire as a tool.

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Redwoods are limbed up to 40 feet to remove fuel ladders.

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Keep forests managed by clearing understory and having fire breaks.

detailed some of the steps in the Wildland Fuel Hazard Reduction article at this link: ForEverGreenForestry.com/documents/BckCWildlandFuelReduction.doc

Our ultimate goal is to have cooler, low-burning fires around our homes and communities with little damage. Ideally, if a fire was burning hot and fast towards your forests, it would not find a lot of flashy, or quick burning fuels, and therefore slow down and crawl along the ground. There is a natural role for high-severity, hot fire in many ecosystems, but that is often on higher and drier sites and now mostly in wilderness areas.

We are learning from our indigenous partners about how to bring prescribed fire (controlled burning) back into our landscape management. Fire plays an important role in many ecosystems. Our predecessors tried to stop it; it's now our job to relearn how to use fire as a tool. It's also the most economical way to treat landscapes for the eventuality of wildfire, and one of the most effective tools for creating ecological fuel breaks to slow or stop wildfire.

Once you have begun forest restoration by thinning your forest, removing the most egregious ladder fuels, and raising the lower branches of the canopy, you could be ready to explore using prescribed fire in your forest. Talk to your local extension forester, volunteer firefighters, or prescribed fire council about how to start the process.

As in most land management, use the precautionary principle. Start small and slow with your forest restoration work. You can always remove more branches or trees later. Forest restoration is a long-term, multi-generational commitment. Do a little every year and watch how your forest reacts, from the tallest trees to the smallest plants and critters. Remember to look up into the canopy to see how the trees respond. Pay attention to which way the winds blow and how trees protect each other in the canopy.

Winter or early spring, when it is still cool and damp, is the best time for your forest restoration work, and especially fun for lighting burn piles on a cold day. Go outside and look at your forest and start slowly managing it for its long-term climate resiliency. Remember to enjoy the beauty and honor its diversity!

Tracy Katelman is a Registered Professional Forester in North Coastal California. She has worked in forest conservation and restoration in both North and South America for decades, most recently focused on teaching communities about how to live with wildfire. She was first introduced to Permaculture by Bill Mollison in the 1980's. Photography by Will Harling MKWC.org

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Oaec.org/afterburn-response-north-bay-fires By permaculture teacher Brock Dolman on recovery after the Sonoma County Fires.

For more information and links on preparing your home and creating defensible space, see Living with Wildfire in Northwestern California magazine Fire.ca.gov/HUU/downloads/Living_w-Wildfire_NW_CAL_April2017.pdf

For more information on home survivability, see the Jack Cohen Files on Firewise: FireWise.org/wildfire-preparedness/wui-home-ignition-research/the-jack-cohen-files.aspx and Holmgren.com.au/store/product/flywire-house/

Regrarians Ltd. webinar on recovering from fire: Youtu.be/26sW_y0a9n0