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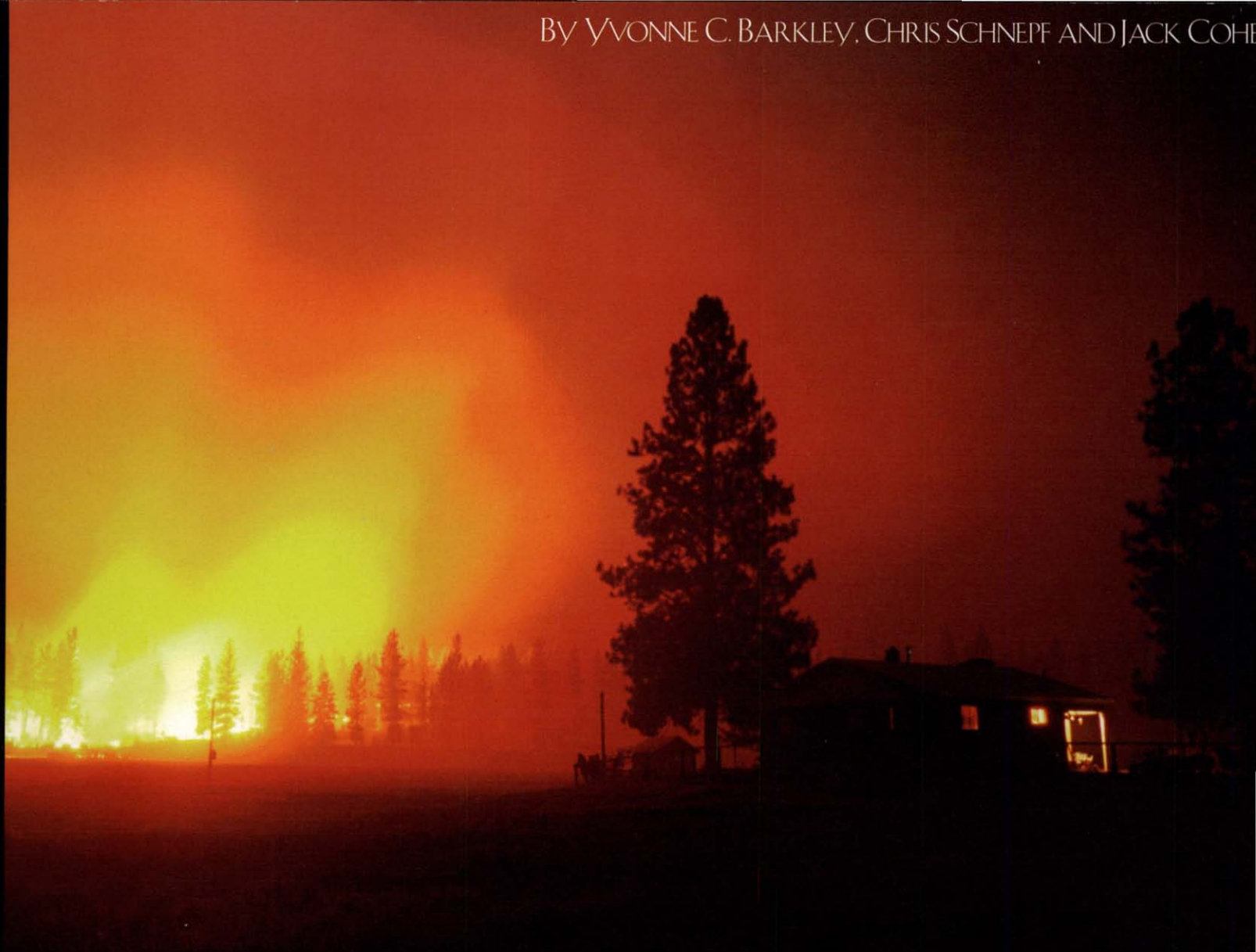
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By YVONNE C. BARKLEY, CHRIS SCHNEPF AND JACK COHE



PROTECTING AND LANDSCAPING HOMES **in the Wildland/Urban Interface**

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Protecting and Landscaping Homes in the Wildland/Urban Interface was rewritten in December, 2004 by: Yvonne C. Barkley, Associate Extension Forester, University of Idaho Extension; Chris Schnepf, Area Extension Educator-Forestry, University of Idaho Extension; and Jack D. Cohen, Research Physical Scientist, Missoula Fire Sciences Laboratory, Rocky Mountain Research Station, USDA Forest Service.

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PROTECTING AND LANDSCAPING HOMES in the Wildland/Urban Interface

Yvonne C. Barkley, Chris Schnepf and Jack D. Cohen

Fire in the forest. Though a natural part of Inland West ecosystems, fire is one of the most feared, fought, and controversial components of our physical environment. The landscapes of the multi-state region termed the Intermountain or Inland West have been shaped by frequent wildfires for thousands of years. Fire's role in these ecosystems is evident from studies of past vegetation, charcoal layers in the soil, fire scars on trees, the even-aged character of most forests, and records of explorers. Until the beginning of the last century, fire burned through the forests of the Inland West at fairly regular intervals and was a natural component of **fire-based** or **fire-dependent** ecosystems. Fire-dependent ecosystems and plant communities depend on periodic fires to maintain their structure and function.

Today, as more people build in forests or rangelands, they become part of the growing **wildland/urban interface** - where the urban environment meets the wild. And when those who inhabit the wildland/urban interface look at wildfire, they see an undesirable natural phenomenon that can destroy homes and property and place lives at risk.

But wildfire is a natural part of Inland West ecosystems. Residents living in wildland/urban interface areas should learn to view wildfire the same way residents in other parts of the country view tornados, floods and hurricanes - as natural phenomena that can devastate property and life - and prepare accordingly.

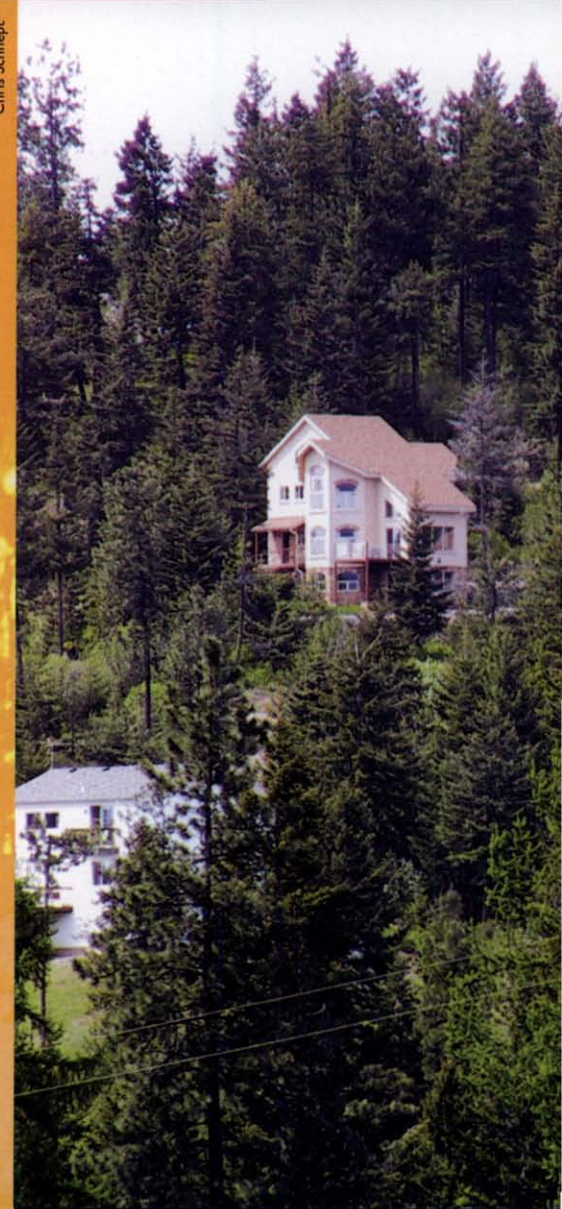
The good news is there are many things you can do to prevent your home from igniting. Recent studies have shown that homes can survive even extreme wildfires often without direct protection by firefighters.

This publication is designed to help you minimize the risks of losing your home from wildfire. The first step is to understand wildfire and how homes are destroyed. Next, consider the fire resistiveness of your house and the surrounding landscape, and take the necessary steps to minimize your home ignition potential. After taking care of your home and immediate surroundings, you can move out into your surrounding forest or rangeland and take additional steps to minimize your risk.

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Chris Schnepf



A growing number of people are living in forest range landscapes.

FIRE HISTORY, ECOLOGY AND BEHAVIOR



American Indians supplemented lightning-caused fire by setting fires to attract game and deprive enemies of cover.



"The Big Burn" destroyed three million acres and an estimated eight billion board feet of timber, with 86 lives lost on August 20 to 21, 1910.

Historically, both lightning- and human-ignited fires occurred over large land areas of the Inland West almost every year. For at least 10,000 years, American Indians supplemented lightning-caused fire by setting fires to attract game and to deprive attacking enemies of cover. Early in the 20th century, federal and state agencies began suppressing wildfire as a political response to catastrophic events such as the 1910 burns in Idaho and surrounding states, and as an effort to protect timber values. This effort became increasingly effective after World War II as planes, helicopters, and other modern equipment and technologies were added to the battle against wildfire. From 1946 to 1979, wildfires in the West were held at low acreages through both wet and dry weather cycles – reflecting an era when human capacity paced environmental effects.

In the late 1970's however, wildfire acres began to grow in spite of increasingly sophisticated firefighting techniques. In 1994, this led the National Commission on Wildfire Disasters to conclude that it was no longer possible to hold wildfires in check by improving the sophistication and capacity of firefighting technology. The irony of wildfire control is that every success in suppressing fire has resulted in growing fuel supplies.

Fire varies in how often it occurs (**frequency**), when it occurs (**season**), and how intensely it burns (**intensity**). Combinations of these elements define an area's **fire regime**. A fire regime is a generalized description of the role fire plays in an ecosystem, and can be described by the characteristics of the disturbance, the dominant or potential vegetation of the ecosystem in which ecological effects are being summarized, and the fire severity based on the effects of fire on dominant vegetation.

For the past 100 years, forest fires have been viewed as detrimental to ecosystems rather than as a natural process of renewal. Natural fire regimes help species that are best suited to an ecosystem maintain a competitive advantage over less suited species. Less competition reduces stress, which in turn reduces insect and disease outbreaks. Fire stimulates understory vegetation, which is important to wildlife and biodiversity, and helps maintain or provide opportunities for species that depend on that niche. Natural fire regimes also stimulate reproductive cycles of many plants while preparing suitable seedbeds for new seedlings. The Inland West, with its slow rates of decay and decomposition, also depends on wildfire for recycling biomass and nutrients, and redirecting carbon and nutrients back into forms usable by growing plants. Without fire, nutrients can remain unavailable in dead woody vegetation for decades.

Two general fire regimes are commonly recognized. A **stand maintenance** fire regime consists of low to moderate intensity surface fires at short intervals (2-50 years). This type of fire regime maintains an ecosystem of essentially uniform stands of dominant tree species and is typical of long-needled conifer forests dominated by ponderosa pine. Stand maintenance fires kill competing vegetation including shade tolerant trees in the understory, consume small to moderate amounts of surface fuels, and reduce fuel loads.

A **stand-replacing** fire regime has moderate- to high-intensity fires that occur at longer intervals (50-500 years) and is typical of short-needled coniferous forests dominated by species such as lodgepole pine. With stand-replacing fires, most or all of the above ground vegetation is killed, and surface fuels and portions of crowns are consumed. A common result of stand-replacing fires is a mosaic of stands of



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Historically, ponderosa pine savannas extended for miles in parts of the Inland West.

Different species composition and age across the landscape. Historically, drier sites were dominated by stand-maintenance fire regimes and moist sites dominated by stand-replacing fire regimes. Sites between these two poles had a mixture of both types of fire regimes.

Fire regimes that are unaffected by suppression are extremely rare today. Today's fires are very different from those in the past, and we must consider what fire will do to our altered ecosystems. *The Fire Effects Guide* (sponsored by the National Wildfire Coordinating Group Prescribed Fire and Fire Effects Team) recognizes that a natural fire regime cannot be perpetuated in unnatural communities. Introducing exotic insects, diseases and plants, altering characteristics and processes of traditional plant communities, and converting acreages to agricultural and urban use have all changed the environment surrounding and influencing our forests and rangelands.

When fire is suppressed for periods of time that are greater than the local natural fire regime, changes in forest structure and function occur. Large amounts of live and dead organic matter begin to accumulate which results in fuel buildup that may result in a historically unprecedented fire.

Fire suppression can increase the number of shade tolerant species (such as Douglas fir and true firs) in a stand, which replace more adapted and shade intolerant species such as pines and western larch. Stand densities increase, and multi-layer canopies begin to develop. By changing the immediate environment, these shade tolerant species begin to alter traditional plant communities. For example, where there once was a savanna-like ponderosa pine forest, you now have a thick Douglas fir/grand fir forest. Competition





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Surface fire.



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Crown fire.

for light, nutrients and moisture increases, not only because of increased stand densities, but because shade-tolerant species tend to require and use more moisture and nutrients than the species they replaced.

Just as there are different types of fire regimes, there also are different types of fire. Two types of wildfires are important to homeowners living at the wildland/urban interface. **Surface fires** burn surface litter and plants, shrubs and small trees. This type of fire kills many seedlings, but usually causes minimal damage to mature ponderosa pine, Douglas fir and western larch. Surface fires can be extremely damaging in young stands of spruce, fir and hemlock, which have low fire resistance. Historically, many forest and rangelands now occupied by interface homes had surface fires every 5-50 years. **Crown fires** move through the canopy of a stand, and burn from tree crown to tree crown. Crown fires are the most intense wildfires. They kill mature trees and shrubs, and are able to move over large areas in short periods of time. In dense stands or in stands with a predominance of species that have crowns that reach the forest floor (such as spruce, fir or hemlock), vegetation often acts as a ladder for flames to move into the forest canopy. Crown fires also occur during periods of high wind, in areas with hilly terrain and in stands of large sagebrush. Regardless of the fuel type, crown fires can have extremely long flame lengths and significant showers of burning brands and embers that often start spot fires far ahead of the fire front.

For the past 60 years, Smokey Bear has been saying, "Remember, only YOU can prevent forest fires." But perhaps he should be saying, "Remember, not even YOU can prevent all forest fires."

WILDLIFE PROTECTION AND DEFENSE

Just because you pay property taxes, do not assume you have fire protection. Firefighting agencies are not equipped and trained the same way. Agencies trained in fighting structural fires may not be trained to fight wildland fires. Those that specialize in wildland fires are not usually trained to enter buildings to control a structural fire. Find out what type of fire protection you have in your neighborhood. Your local state lands agency office and county tax assessor's office should be able to provide you with this information.

In general, city fire departments are funded by taxpayers who live inside city limits. These agencies often have no obligation, or are prohibited, to provide fire protection outside their jurisdiction. Rural fire districts are usually areas close to cities where there is sufficient improved property and an adequate tax base to provide funding. State forestry departments usually are wildland fire protection agencies. These agencies may not be responsible for, nor equipped or trained to fight all types of fires. Their primary function is to prevent and extinguish wildland fires. Federal land agencies, such as the USDA Forest Service and the USDI Bureau of Land Management, also are spending more time fighting interface fires, but have primary



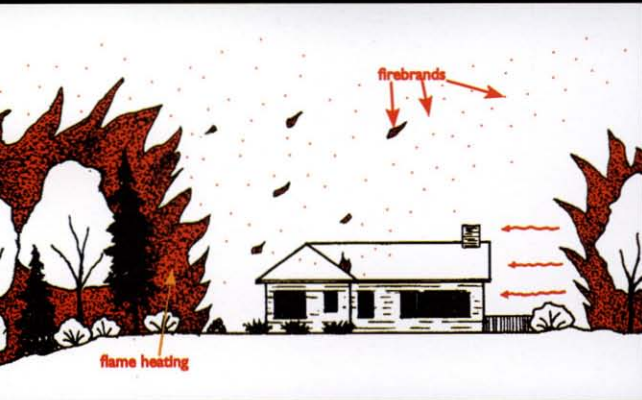
Karen Wattenmaker

responsibility on federal lands. In all cases, cooperation between all types of firefighting agencies is increasing, with common communication and organization structures being adopted and interagency teams suppressing wildland/urban interface fires.

Our current structural fire response is very effective during most conditions. The success of standard fire protection depends on firefighters being able to suppress a fire's spread and intensity. The distance to the nearest fire station, the road access for firefighting equipment and the ability to find the home

all influence how quickly firefighters can respond to any given fire situation, and in many ways determine a fire's size when attacked. The response time, coupled with equipment capabilities, water availability (e.g., fire hydrants), and training effectiveness further determine the effectiveness of suppressing a fire's intensity. Firefighters can limit the fire within a single structure or prevent the fire from spreading beyond that structure.

But an extreme wildland/urban fire is not the typical fire situation. The right combination of fuels, weather conditions and topography can produce a fast spreading



Lorraine Ashland illustration

es ignite in two principal ways: flame heating and, more commonly, air-borne firebrands.



Karen Wattenmaker

me with a clean, non-flammable roof and gravel at the station.

intensely burning wildfire that defies our ability to suppress it. As an intense wildfire approaches areas of residential development, blizzards of flaming brands and embers blow in front of the flames and ignite vulnerable homes. Instead of one house burning, the extreme wildland/urban fire usually threatens many homes with possibly dozens igniting and burning simultaneously. A situation such as this often prevents firefighters from accessing, let alone protecting, many homes. **When access is denied by extreme fire conditions and firefighters cannot get to your home, then all the things that influence firefighting effectiveness become irrelevant.** For extreme wildland/urban fires, standard firefighting operations and factors that influence those operations do not apply.

The Home Ignition Zone

So how do we prevent wildland/urban fire disasters involving homes? Fire and land management agencies cannot help prevent fire disasters without homeowners' participation. If you live in the wildland/urban interface, recognize that the **home ignition zone** (your home and its immediate surroundings) belongs to you. **That means you have the primary responsibility to reduce your home's vulnerability to wildfire.**

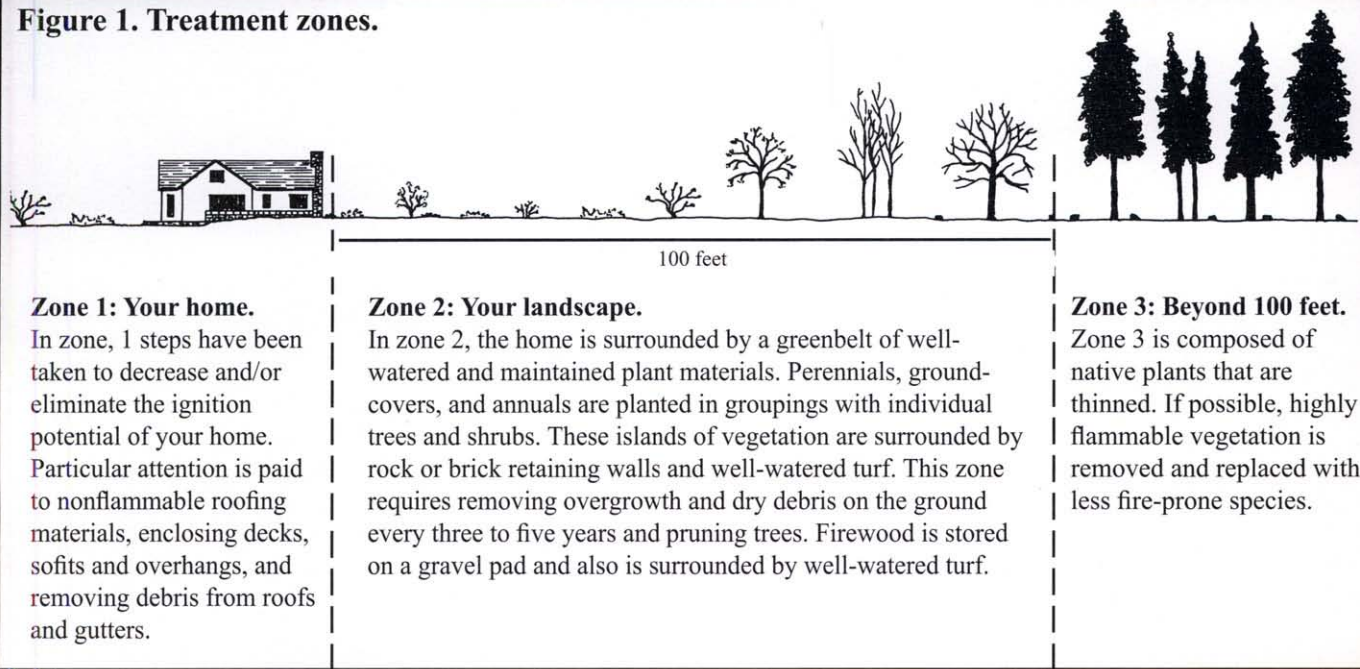
Homes that are not vulnerable to ignition will not burn in a wildfire. During wildland/urban fires homes ignite in two principal ways: from flame heating and/or more commonly from firebrand ignition (burning ember spot ignitions). Regardless of how they start, all fires must meet the requirements for ignition and combustion - a sufficient amount of fuel, heat and oxygen.

In the case of wildland/urban fires, consider your house the fuel and all things burning around your house the heat. Oxygen is always sufficient for these fires. By reducing the amount of vegetation around your home, you are reducing or removing heat sources and by doing so, limiting or preventing flames from contacting fuel and providing sufficient heat to cause ignition. Research has shown that even high intensity wildfires burning at distances beyond 100 to 200 feet are not capable of directly igniting a home's wood walls.

Most actions we can take to reduce home ignition potential are directed to the home and its immediate surroundings within 100 feet (the **home ignition zone**). The home ignition zone's condition determines a home's vulnerability to ignition during wildfires.

There are many things you can do to reduce your home's ignition potential. You can do this without removing all the vegetation from around your home and by using common home construction materials.

Figure 1. Treatment zones.



Lorraine Ashland Illustration

Your Home

If you have not built your home yet, try to place structures on flat ground. Fires burn uphill more rapidly than down or across a flat. Avoid draws, as they can serve as a chimney, creating more intense fires that spread rapidly with uphill drafts. Use fire resistant materials to build or to replace flammable materials. Tile, metal or asphalt roofing materials and brick or stucco walls are the most fire resistant. Untreated or poorly treated wood shake shingles are the least fire resistant and in many cases, offer almost certain ignition of your home.

Enclose the undersides of decks and porches, eaves, soffits and fascia. Cover vents with noncombustible screening to prevent firebrands or other flammable objects larger than ¼" from entering the space. PVC and vinyl products should be avoided as they melt even at low temperatures.

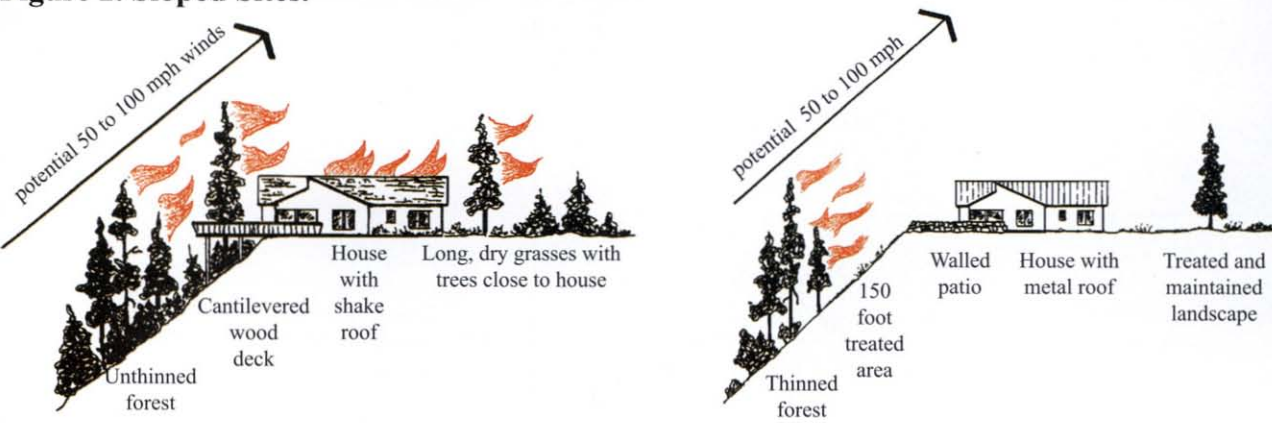
Double pane windows and tempered glass are recommended for large windows and high risk areas. They will lessen the chance of windows breaking and allowing embers to enter your home and ignite it from within.

Construct covers for all attic and basement openings. Pay attention to places where combustible materials meet each other, for example, where a wooden fence is attached to the wooden stairs that leads to a wooden deck. Park boats, campers and other potentially flammable recreational vehicles in an enclosed area or away from your home.

If possible, have power lines buried to protect them from fire and prevent them from igniting vegetation. If burying the lines is not possible, contact your power company to make sure trees and branches are trimmed 10 to 15 feet away from lines.

Regularly remove debris from roof, gutters and other areas, such as corners and under stairs, where it accumulates.

Figure 2. Sloped Sites.



Home with high ignition potential

- House at crest of hill
- Overhanging wood deck
- Shrubs below deck and tree growing through deck add to fire danger
- Shake roof burns easily

Home with low ignition potential

- House set back from crest is sheltered
- Stone walls deflect fire
- Fire-proof roof protects house from embers
- Watered lawn prevents ground fires
- Enclosed eaves reduce fire risk
- Protective clearing downhill from house

Lorraine Ashland illustration



Fire prone plants share characteristics. Note the accumulation of fine, dead material, small, needle-like leaves and low-growing branches.

Your Landscape

Creating a fire resistive landscape involves creating concentric zones around structures, with increasing resistance in zones closest to structures. The goal is to disrupt continuous fuel patterns to slow advancing flames. A minimum distance of 100 feet around your home needs this type of comprehensive landscaping. Steep slopes or windswept exposures need greater treatment distances.

To create a fire resistive landscape, begin by removing highly flammable brush (e.g., junipers) and dead trees and shrubs from around all structures for at least 100 feet. Reduce lateral movement of fire between crowns by spacing tree crowns 10-15 feet apart. Foundation plantings should be carefully selected and well maintained. Plants should be kept low, free of dead material and well watered.

Eliminate ladder fuel configurations – **ladder fuel** refers to plant growth structured like the rungs of a ladder – leaves, grasses, small shrubs, large shrubs and trees. You can further reduce the chance of surface fire climbing into tree crowns by pruning dead branches and limbing up the base of the crown 6-15 feet from the ground. Make sure 50 percent of the trees height still has live branches.

Use hardscape features such as driveways, and gravel, concrete or paved walks as fire breaks. These firebreaks can be used to separate foundation plantings from the rest of the landscape, as well as provide safe and well-defined access to your property and home. Large, paved patio areas not only provide effective firebreaks, but also increase your outdoor living space.

Raised beds made from non-flammable materials such as rocks or bricks are another good way to create firebreaks between adjacent landscape areas. Even a short rock wall will provide an effective firebreak between a lawn and your home, or between fire protection zones. Islands of vegetation in raised beds, surrounded by well-watered turf, allow for a beautiful and fire resistive landscape.

Use gravel mulch, versus bark, against any structures and under decks and porches and in areas adjacent to wooden stairs and fences. These areas also should be kept free of vegetation and debris.

Store firewood 30-100 feet from any structure and create a vegetation free zone around the pile. Consider replacing wooden tables and chairs with ones made from



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Fire-resistant plants also share characteristics. These hen and chicks have a high moisture content in their leaves, little accumulation of dead vegetation and are slow growing.



Karen Wattenmaker

Islands of vegetation in raised beds surrounded by well-watered turf allow for beautiful and fire resistant landscape.

Further enhancements (right) include a non-flammable foundation, enclosed foundation soffits and surrounding gravel mulch.



nonflammable materials such as metal and glass. Clear plant materials from around propane tanks, which should be placed well away from your home. Also replace wooden fencing around tanks with non-flammable fencing materials such as chain link or stone or brick walls.

Choosing Fire Resistive Plants

Before discussing reducing fire hazard through plant material selection, remember – all plants will burn if conditions are right. The term **fire resistive** is used when referring to plants that are less flammable than others. **The selection of fire resistive plants is usually far less important than how those plants and other landscape elements are configured in the landscape, and how those landscape materials are maintained.**

Plant condition is more important than the plant species. Depending on plants' growth form and access to water and nutrients, the same species may be fire-resistive in one environment and combustible in another. Summer irrigation may make the difference between an extremely flammable plant and one that will not burn readily.

Fire prone plants typically share certain characteristics.

- They are water-stressed.
- They accumulate fine, twiggy, dry or dead material.
- They are commonly blade-leaf or needle-leaf evergreens.
- They have stiff, leathery, small or fine lacy leaves.
- They may have loose or papery bark.
- They are plants that flame (not smolder) when preheated and ignited with a match.
- They retain low growing branches and do not readily lose these branches as they become shaded.

Fire-resistive plants share the following characteristics.

- They have high moisture content in their leaves.
- They have little or no seasonal accumulation of dead vegetation.
- They have a low volume of total vegetation.
- They have an open, loose branching habit.
- They are slow growing.



Your property should be clearly marked with a non-flammable sign, with numbers and letters at least 4 inches high on a contrasting background. Make sure vegetation does not obstruct the sign.

Water

Though your home's fire resistiveness should not depend on a water supply, adequate amounts of water are needed to maintain your landscape. Whether you have an installed, below ground system with pop-up sprinkler heads or a series of hoses and sprinklers, make sure they are well maintained. A well-watered landscape is a fire resistant landscape. Use your water wisely and concentrate irrigation efforts in the areas immediately surrounding your home. If you are not able to water your lawn regularly, keep the turf short.

If you depend on a well for your water supply, purchasing a gas-powered generator will provide back-up power to the pump in the event you lose electrical service. If you install (or have) an on-site back-up source of water (at least 2,500 gallons of water available for emergency backup), make sure it is well marked and accessible to fire trucks. Firefighters usually need at least 16 feet to access a water source. Pools and ponds not only look great and provide recreational opportunities, but make excellent firebreaks, improve wildlife habitat and can provide additional sources of water.

Beyond 100 feet

You also can reduce fuels and fire risk in zones beyond 100 feet from your house with additional thinning and pruning. However, you need not be as aggressive in reducing fuels in these areas as you would closer to your house. Leaving green branches or lopping them into small pieces will help recycle nutrients. Coarse woody debris (wood larger than three inches in diameter) has relatively low fire risk – leaving a small amount of it lying flat on the ground benefits forest growth and wildlife. To decrease your chances of bark beetle problems, avoid cutting green pines larger than three inches in diameter in the winter and spring, or destroy or peel the bark of stemwood pieces that size.

Roads, access and signs

There are situations when firefighters and other emergency response agencies may be able to access your property only to find that they cannot find you or cannot get to your home because of your road.

Your property should be clearly marked with a nonflammable sign, with numbers and letters at least four inches high on a contrasting background. Make sure vegetation does not obstruct the sign.

Vehicles from firefighting agencies must have adequate access to your property. You should have two ways to access your property in the event that one route is threatened. Roads should be wide enough for two-way traffic, and vegetation should be cleared 10 feet from along roadsides and driveways. If a two-way road is not possible, turnouts should be constructed. Fire equipment has difficulty negotiating excessively steep (greater than 12 percent) or sharp roads. Bridges should be strong enough to support fire equipment and the water they carry (at least 34,000 pounds) and be identified as such. If access to your site leads to a cul-de-sac, a minimum of 50 feet turnaround radius is needed.

MAINTAINING FIRE RESISTIVE LANDSCAPES

Maintaining a fire-resistant landscape is an on-going effort. You never know whether this year will be the big fire season for your neighborhood.

Grass. Green turf is very fire resistive, so if possible, water your lawn through the summer. Longer watering cycles of 1-1.5" of water per week in one to two applications will maintain healthy grass on most soils. If you cannot keep the grass watered, keep it trimmed low, especially close to the house. At the outer edge of your landscape, establishing a low-maintenance, low-growing grass, such as sheep fescue or hard fescue, both of which are very competitive, will help reduce new tree or shrub establishment.

Remove plant litter around structures. When maintaining your landscape, you must actively reduce fuel accumulations by regular pruning, mowing, raking and removal. The less accumulated plant debris, the slower a fire will spread, and the lower your spot fire potential. Since fuels and other factors closest to the home have a great influence on the probability of a home burning down in a wildfire, pay extra attention to flammable materials that contact the house. Keep the roof and gutters clear of needles and other debris. Don't allow plant litter deposited by wind to accumulate in corners or at the foundation of the house - burning embers may easily collect in the same places and ignite your home.

Nature abhors a vacuum. Beyond your lawn, creating more spaces between trees means more light will reach the forest floor. There also will be more moisture and nutrients available for plant growth. All of this means remaining understory plants and trees will grow larger and faster, especially younger trees, and new plants have a more favorable environment to germinate and grow.

To make matters worse, the tree species that tend to regenerate in these partially shaded environments are shade tolerant species such as Douglas fir and grand fir. Douglas fir and grand fir are typically less resistant to insects, disease, drought and fire than shade intolerant species such as pine or larch.

Trees. If trees have just a few branches within 10-15 feet of each other, prune them back. If adjacent trees have many branches crowding together, it may be time to thin out a few more trees. This also will improve the health of the remaining trees. Prune dead branches as needed. Cut seedlings periodically after they emerge in the understory. For trees you are keeping, be sure to water them directly and deeply - lawn watering does not usually penetrate the sod to the tree roots. Insects and disease also should be monitored and controlled as necessary.



Chris Schnepf



Chris Schnepf

Don't allow plant litter deposited by wind accumulate in corners, at the foundation, roofs and gutters of the house - burning embers may easily collect in the same places and ignite your home.



Chris Schnepp

Clearing saws are an effective way to cut shrubs and small trees.

Shrubs. There are a variety of control options for shrubs that you do not want to keep as part of the landscape.

Mechanical control. Cutting shrubs off at the base can reduce fuel hazard. Many native Idaho shrubs will re-sprout vigorously from latent buds in the root crown – an adaptation to top removal by fire especially on stems smaller than two inches thick. Repeated trimming is usually necessary to maintain reduced fire risk. Mid-summer is the best time to do this.

A variety of tools can be used for mechanical control, ranging from loppers and pruning shears on smaller jobs, to chainsaws or clearing saws for multiple stems or stems larger than one inch. For smaller diameter stems, brush mowers, brush hogs or similar devices may be used. Regardless of the tools used, take proper safety precautions (e.g., protective eyewear, chaps for chainsaw use, etc.).

Mulch. Mulch can help suppress understory plants, but remember, bark, wood chips and other organic materials will burn - keep them away from the base of structures. Use rock or other non-flammable material instead. Do not make the mulch deeper than one inch to avoid interference with root activity and tree health.

Livestock. Sheep or goats also may help maintain brush at a low level. Time grazing to late spring or early summer (not early spring) to minimize soil impacts. Later grazing also reduces plants' ability to regenerate because of drier soils.

Herbicides. Several herbicide brands are sold to kill brush. Brush control herbicides available in local home and garden stores frequently include triclopyr (e.g., Blackberry and Brush Killer[®], Brush-B-Gon[®]) or glyphosate (e.g., Round-up[®]). Brush control herbicides targeted to larger forest owners or commercial contractors for forest use are often packaged in larger containers and may have to be specially ordered. These herbicides include: imazpyr (e.g., Arsenal[®]), glyphosate (e.g., Accord[®]), 2,4-D, triclopyr (e.g., Garlon[®]), picloram (e.g., Tordon[®]), dicamba (Banvel[®] or Clarity[®]), or combinations of these (e.g., 2,4-D and triclopyr in Crossbow[®]). Some of these herbicides have specific state regulations such as requiring an applicator's license or restrictions on how close they can be applied to a home or stream. The herbicide labels will list plants controlled by the herbicide. Regardless of the herbicide, always read and precisely follow the label recommendations before purchasing and using it. For current recommendations for specific brush species, call your local Extension Office or consult the Pacific Northwest Weed Management Handbook, available online at: <http://pnwpest.org/pnw/weeds>.



UI Erickson Weed Diagnostic Lab.

Spotted knapweed



UI Erickson Weed Diagnostic Lab.

Leafy spurge

Herbicides control brush species efficiently, and if label directions are followed, the effects on other forest values, beyond removing the brush, are negligible. There are many methods of killing brush with herbicides, but the most common for landscape maintenance are stump treatments, basal bark treatments and foliage treatments.

- **Stump treatments.** You can effectively reduce sprouting by immediately (within an hour) applying a very small amount of undiluted herbicide to the perimeter of freshly cut stump surfaces. Immediate application is important; otherwise the plant quickly develops a protective wax layer over the wound.
- **Basal bark treatments.** Some herbicides can be applied directly to the stems at the base of the plant. These applications usually require a specific additive, described on the herbicide label. They may be applied either during the growing season or dormant season. For example, both Banvel® and Forestry Garlon 4® are labeled for use as dormant stem treatments for small diameter brush. Brush will still have to be cut and removed after killing it to remove fuel.
- **Foliar treatments.** Foliar sprays involve treating the whole plant after it is fully leafed out. Timing varies according to the herbicide used and it is important to make sure the herbicide is moved by the plant into the roots to minimize re-sprouting. Avoid applying the herbicide until the spray drips off the plant, since this indicates you are applying more herbicide than necessary. Again, brush will still have to be cut and removed after killing it to remove fuel.

Noxious Weeds

Spotted knapweed, leafy spurge and other noxious, non-native weeds establish readily in disturbed areas. For information on identifying and controlling these non-native plants, check with your local Extension Office or county noxious weed control department.



Shrubs frequently resprout after cutting.

YOU AND YOUR FAMILY



Karen Wattenmaker

Use aluminum foil or metal flashing to cover areas where combustible materials meet each other. Think of where snow gathers and drifts in the winter.

Homeowners living in the wildland/urban interface should be prepared to evacuate themselves, their pets and their livestock in the event of a wildfire disaster. Know your fire protection district; post their number by all telephones. Establish an evacuation plan and practice fire drills with your family. Place all of your important documents and valuables in a fire-safe box and keep it in an accessible location. Have a place to go – make arrangements with friends or relatives who live in town or in another area. If you have pets or livestock, make arrangements for them as well. Pre-plan an emergency community fire procedure and an alert system with your neighbors.

When a wildfire threatens

In the event of a wildfire, call 911 or your fire protection district. Ready yourself and your family for an emergency evacuation.

- Dress for safety. Put on socks, closed-toed leather shoes or boots, long pants and a long-sleeved shirt. Grab a pair of leather gloves, a bandanna and a hat as well.
- Put clothing, food, water, valuables and pets in your vehicle.
- Load horses or other livestock that will need to be evacuated.
- Park in the direction you will escape.
- Leave the key in the ignition.

If there is time, take the following steps to increase your fire protection:

- Use aluminum foil or metal flashing to cover areas where combustible materials meet each other. Think of where snow gathers and drifts in the winter – windowsills, where the house meets the deck, corners, etc. This also is where firebrands and embers can gather and start a blaze.
- Shut off gas supply and move the smaller propane tank that fuels your gas grill away from structures.

- Cover attic and basement vents.
- Look around for flammable materials near your home. That broom leaning against the house is a great source of ignition if a firebrand lands in the bristles.
- Get the emergency generator ready to run any pumps.
- Wet down decks, flammable siding and lawns.
- Turn on all indoor and outdoor lights to make your house easier for firefighters to find in the dark.

After a fire

Check for and mop up any hot spots in your yard and on the roof. Burned areas should be monitored for at least 12 hours to make sure the fire is out and danger is past. Check stumps and roots – they can smolder for long periods of time. Use care around charred and partially burned trees as they can fall without warning.

Conclusion

Some communities may have ordinances addressing home ignition zones and water storage that may vary from the information presented in this publication. Check with your local planning and zoning department for further information on local ordinances.

You may be able to decrease your fire risk even further by encouraging your neighbors to protect and defend their property from wildfires.

Life on the urban-wildland interface is enjoyable but not without danger. In western forest environments, wildfire should be anticipated and planned for, not unexpected and dismissed. You have a choice - if you take precautions to protect your property, it will increase your chances of escaping serious damage from wildfire.



PLANT MATERIAL SUGGESTIONS FOR THE INLAND WEST



Dusty Miller

UI Extension Forestry



Irises



Lily turf

UI Extension Forestry



California Poppy

Much discussion went into the inclusion of the following plant material list.

There are no fire proof plant materials. Landscape maintenance and plant care (pruning and watering) is far more important than the selection of fire-resistive versus fire-prone plant materials.

The list is not all-inclusive. For example, there are more than 100 genera of herbaceous perennials, many that would fit the criteria listed on page nine, that are not listed here. When planning your landscape, use the characteristics of fire-resistive and fire-prone plants along with site characteristics such as slope, aspect, hardiness zone and amount of precipitation to choose plant materials suitable for your site.

Botanical Name	Common Name	Botanical Name	Common Name
<i>Achillea</i> spp	yarrow	<i>Chrysanthemum</i> spp	chrysanthemum
<i>Ajuga reptans</i>	carpet bugle	<i>Coreopsis</i> spp	coreopsis
<i>Allium</i> spp	ornamental allium	<i>Cotoneaster</i> spp	cotoneaster
<i>Anaphalis margaritacea</i>	pearly everlasting	<i>Delosperma nubigenum</i>	hardy ice plant
<i>Aquilegia</i> spp	columbine	<i>Delphinium</i> spp	delphinium
<i>Arabis</i> spp	rockcross	<i>Dianthus</i> spp	pinks
<i>Arctostaphylos uva-ursi</i>	kinnikinnick	<i>Echinacea purpurea</i>	purple coneflower
<i>Armeria maritima</i>	common thrift	<i>Eschscholzia californica</i>	California poppy
<i>Artemisia frigida</i>	fringed wormwood	<i>Fragaria chiloensis</i>	wild strawberry
<i>Artemisia ludoviciana</i>	prairie sage	<i>Gaillardia grandiflora</i>	blanket flower
<i>Artemisia stellerana</i>	dusty miller	<i>Galium odoratum</i>	sweet woodruff
<i>Asarum caudatum</i>	wild ginger	<i>Geranium</i> spp	hardy geraniums
<i>Aster</i> spp	aster	<i>Geum</i> spp	prairie smoke
<i>Bergenia</i> spp	bergenia	<i>Hemerocallis</i> spp	daylily
<i>Campanula</i> spp	bellflower	<i>Heuchera</i> spp	coral bells
<i>Cerastium tomentosum</i>	snow in summer	<i>Iris</i> spp	iris

Botanical Name	Common Name
<i>Kniphofia uvaria</i>	red hot poker
<i>Leucocrinum montanum</i>	sand lily
<i>Liastris</i> spp	graygeather
<i>Lilium</i> spp	lilies
<i>Limonium latifolium</i>	sea-lavender
<i>Lupinus</i> spp.	lupine
<i>Mahonia repens</i>	creeping mahonia
<i>Mirabilis jalapa</i>	four o'clock
<i>Monarda</i> spp.....	bee balm
<i>Oenothera</i> spp.....	evening primrose
<i>Papaver</i> spp	poppy
<i>Penstemon</i> spp.....	penstemon
<i>Phlox subulata</i>	moss pink
<i>Polemonium caeruleum</i>	Jacobs ladder
<i>Ratibida columnifera</i>	Mexican hat
<i>Rosa</i> spp	roses
<i>Rudbeckia hirta</i>	black-eyed susan
<i>Salvia</i> spp.	salvia
<i>Scutellaria</i> spp	skullcap
<i>Sedum</i> spp.....	stonecrop
<i>Sempervivum tectorum</i>	hen and chicks
<i>Vinca major</i>	periwinkle
<i>Vinca minor</i>	myrtle, dwarf periwinkle
<i>Viola</i> spp.	violet
<i>Yucca</i> spp.....	yucca

Grasses

Botanical Name	Common Name
<i>Agropyron</i> spp	wheatgrass
<i>Buchloe dactyloides</i>	buffalograss
<i>Dactylic glomerata</i>	orchardgrass
<i>Festuca</i> spp	fescue

Botanical Name	Common Name
<i>Lolium</i> spp.....	ryegrass
<i>Poa pratensis</i>	Kentucky bluegrass

Vines

Botanical Name	Common Name
<i>Campsis radicans</i>	trumpet vine
<i>Lonicera</i> spp and hybrids.....	honeysuckle
<i>Rosa</i> spp.....	roses
<i>Vitis</i> spp.....	grapes
<i>Wisteria</i> spp.....	wisteria

Shrubs

Botanical Name	Common Name
<i>Amelanchier</i> spp.	serviceberry
<i>Atriplex canescens</i>	four wing saltbush
<i>Berberis</i> spp.....	barberry
<i>Buddleia</i> spp	butterfly bush
<i>Caryopteris</i> spp.....	blue-mist spirea
<i>Cercocarpus</i> spp.....	mountain mahogany
<i>Chrysothamnus</i> spp.	rabbittbrush
<i>Cornus stolonifera</i>	red osier dogwood
<i>Cotoneaster</i> spp.....	cotoneaster
<i>Euonymus alata</i>	burning bush
<i>Forsythia x intermedia</i>	forsythia
<i>Holodiscus discolor</i>	ocean spray
<i>Ligustrum</i> spp.....	privet
<i>Mahonia aquifolium</i>	Oregon grape
<i>Paxistima</i> spp.....	dwarf mountain lover
<i>Philadelphus lewisii</i>	mock orange; syringa
<i>Prunus besseyi</i>	western sand cherry
<i>Prunus tomentosa</i>	Nanking cherry



Lupine



Black-eyed Susan



Honeysuckle



Oregon grape



inga



pen



apple



Oak

Botanical Name	Common Name
<i>Prunus virginiana</i>	chokecherry
<i>Physocarpus</i> spp.....	mountain ninebark
<i>Purshia tridentata</i>	antelope bitterbrush
<i>Pyracantha</i> spp.....	pyracantha
<i>Rhamnus frangula</i>	buckthorn
<i>Rhododendron</i> spp.....	azalea; rhododendron
<i>Rhus</i> spp.	sumac
<i>Ribes</i> spp.	currant
<i>Rosa rugosa</i>	rugosa rose
<i>Rosa woodsii</i>	Woods rose
<i>Rubus</i> spp.....	raspberry, blackberry
<i>Sambucus</i> spp.....	elderberry
<i>Shepherdia</i> spp.....	buffaloberry
<i>Symphoricarpos albus</i>	snowberry
<i>Syringa vulgaris</i>	common lilac
<i>Viburnum</i> spp	viburnum

Trees

Botanical Name	Common Name
<i>Acer</i> spp.....	maple
<i>Aesculus</i> spp.....	horsechestnut and buckeye
<i>Alnus</i> spp.....	alder
<i>Carya</i> spp.....	hickory
<i>Catalpa speciosa</i>	northern catalpa
<i>Celtis occidentalis</i>	hackberry
<i>Cercis canadensis</i>	eastern redbud
<i>Crataegus</i> spp.....	hawthorn
<i>Fagus</i> spp.....	beech
<i>Fraxinus</i> spp.....	ash
<i>Gleditsia tricanthos</i>	honeylocust
<i>Malus</i> spp	apple, crabapple
<i>Populus</i> spp	aspen and cottonwood
<i>Prunus</i> spp	cherry, prune, plum
<i>Quercus</i> spp	oak
<i>Robinia pseudoacacia</i>	black locust
<i>Salix</i> spp.....	willow
<i>Sorbus scopulina</i>	western mountain ash

This plant list includes information from the following sources:

Fire Resistant Plant Materials for the Rocky Mountains. Gary Moen, Advanced Instructor of Horticulture, Larry Selland College of Applied Technology, Horticulture Department, Boise State University.

Firewise Plants for Utah Landscapes. Mike Kuhns, State Extension Forester, Utah State University. NR/FF/002.

Fire Resistant Plants for Montana Landscapes. Gough, R.E. and J. Lamb. Montana State Extension. MT 2001-01Ag. 3/2001.

BEFORE A WILDFIRE THREATENS

✓ CHECKLISTS

Your Home

- Build with nonflammable materials, especially roof, decks and siding.
- Enclose undersides of decks, eaves, soffits and fascia.
- Install double paned or tempered glass windows.
- Have screens on vents, and covers for attic and basement openings.
- Clearly mark property with nonflammable signs with clear letters at least four inches high.
- Provide access for fire equipment.

Your Landscape

- Treat a minimum distance of 100 feet around your home, removing highly flammable brush, and dead trees and shrubs.
- Eliminate ladder fuel configurations, and prune trees up six-15 feet.
- Concentrate plant materials in islands surrounded by nonflammable walls and well-watered or short turf.
- Keep lawn and plant materials well watered and trimmed.
- Store firewood away from structures.
- Clean debris from roof and yard frequently.
- Remove contiguous fuels (i.e. wooden fence to wooden stairs to wooden deck) and combustible enclosures from around propane tanks and woodpiles.
- Choose "fire-resistive" plant materials.
- Maintain you irrigation system.

Beyond 100 feet

- Eliminate ladder fuel configurations and thin dense stands.

Landscape Maintenance

- Keep lawn and landscape materials well-watered.
- Regularly remove flammable debris by pruning, raking, mowing and removing.
- Pay attention to debris removal from roof, gutters and from corners, under stairways and along the foundations of your structures.
- Maintain spacing of thinned areas by pruning, mulching, grazing or chemical removal of small trees and shrubs.
- Watch for establishment of noxious weeds and control when populations are small.

Evacuation Planning

- Establish an evacuation plan.
- Plan an emergency escape route.
- Place important documents in a fireproof box and keep in an accessible location.
- Arrange for a place for you and your animals to go.

WHEN A WILDFIRE THREATENS

- Know fire protection agencies; post numbers by phones.
- Dress for safety.
- Put clothing, food, water, valuables and car.
- Load horses or other livestock to be evacuated.
- Park in the direction you will escape.
- Leave the key in the ignition.

If there is time:

- Use aluminum foil or flashing and cover where debris collects.
- Cover attic and basement vents.
- Shut off gas supply, move gas grill away from structures.
- Look for flammable materials around home.
- Ready emergency generator.
- Wet down decks, siding, lawns and roof.
- Turn on all indoor and outdoor lights to make your house easier for firefighters to find in the dark.

NOTES

Local fire district:

Name: _____

Phone number: _____

State fire protection district:

Name: _____

Phone number: _____

Neighbors:

Name: _____

Phone number: _____

Name: _____

Phone number: _____

Name: _____

Phone number: _____

Employment:

Name: _____

Phone number: _____

Name: _____

Phone number: _____

Doctor:

Name: _____

Phone number: _____

Veterinarian:

Name: _____

Phone number: _____

Schools:

Name: _____

Phone number: _____

Name: _____

Phone number: _____

Are you going to be out-of-town?**Have you notified your neighbors?****Where you can be contacted:**

Name: _____

Phone number: _____

Name: _____

Phone number: _____

References

The following references were used in the development of this publication and also provided useful information on protecting your home from wildfire.

Fire Safe Inside and Out (video). Northwest Fire Prevention Cooperatives. Available through the Washington Department of Forest Resources, Resource Protection Division, P.O. Box 47037, Olympia, WA 98504-7037. 22 minutes.

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