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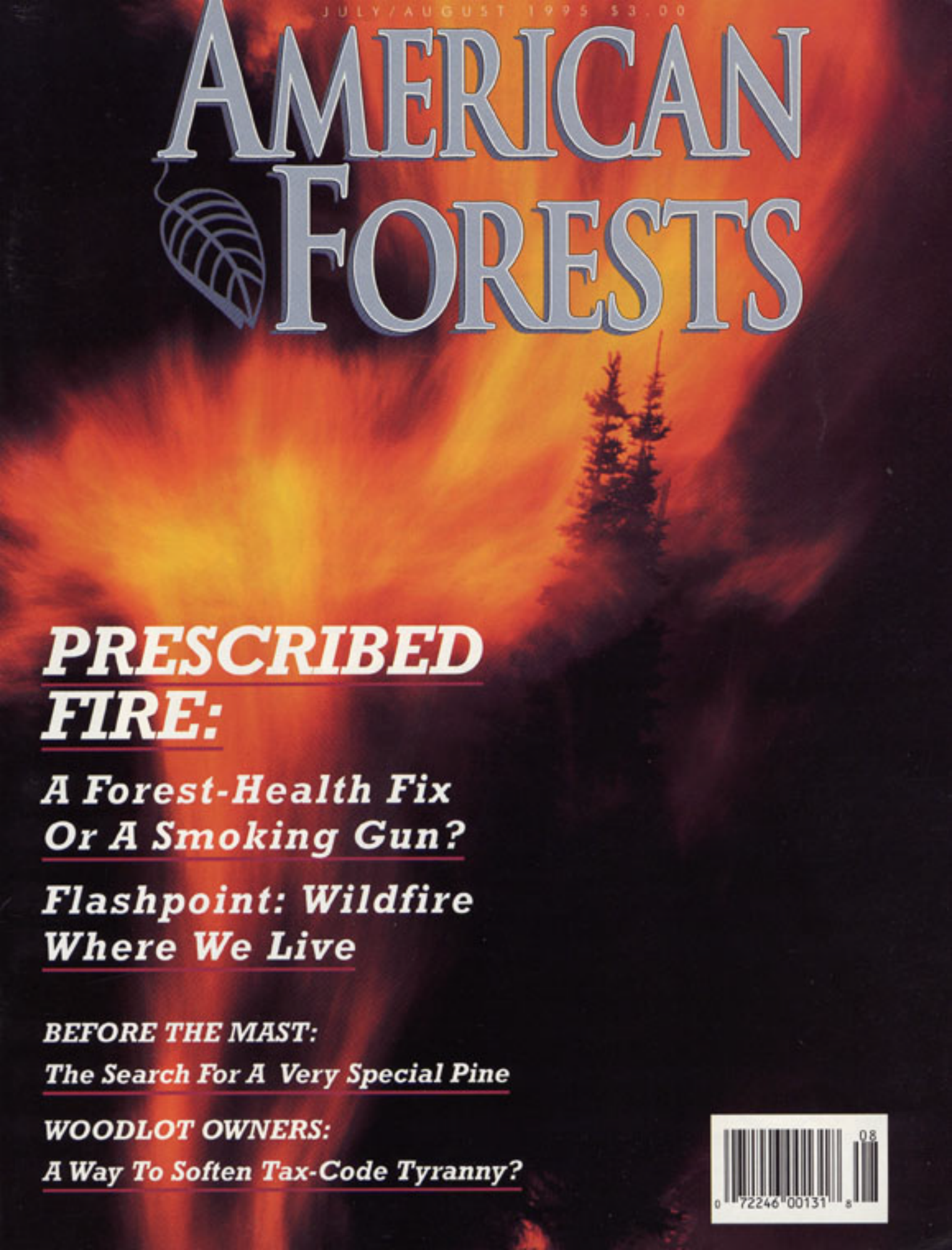

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Living with FIRE

BY PETER STEKEL

When city dwellers head for the woods, they must exchange street smarts for wildfire savvy.

From their recently rebuilt back porch, Bill and Karen McClung can see the ridge over which the 1991 Oakland fire swept, destroying 3,500 homes—including their own. The hills around them, now occupied by only a smattering of houses, are essentially undeveloped. This is where the danger lies.

The number of people looking to get "back to nature" grows yearly, and with it the possibility that wildfire will sweep through their destination: the woodsy swatch between city and country called the urban/rural interface. This urban flight places an excessive burden on land-management agencies and their ability to fight fire. Adding to the problem, many homeowners are slow to realize the responsibilities that come with living so close to nature.

Mention wildfire and many people first think of the massive blazes so common of late in western national forests. But look at what's happening in the urban/rural interface: "Black Friday" across Florida in 1985. Bend, Oregon, in 1990. Oakland in 1991. Malibu, California, and Leavenworth, Washington, in 1994. Many firefighters and landscape architects feel that although expansion into the interface outpaces urban growth, building codes in most places remain the same, leaving roads, water, street signs, and quick fire response lacking.

Oregon's biggest interface disaster, the 1990 Awbrey Hall Fire two miles from Bend, destroyed 22 homes. The fire jumped three major roadways and the Deschutes River while burning 3,500 acres in 10 hours. It cost $2 million to suppress and caused $9 million in damage. Ten years ago those houses weren't there; 10 years from now there will be more.

"Homes are spreading like fingers into the forest," says Paul Ries of the Oregon Department of Forestry. His department has mapped its urban/rural interface and estimates that 187,000 structures—a combined value of $4.6 billion—are at risk.

KAREN MATTHIAS/BOISE NATIONAL FOREST

Mike Ferris, a public affairs officer for the USDA Forest Services, predicts that "The interface is going to become a big problem for all agencies." He's amazed so many people have taken the risk of moving there. "I would love to live out in the woods, but I don't want to take the risk," he says.

Steve Hart, fire division supervisor of the Colorado State Forest Service, agrees. Hart predicts that, given current forest conditions, interface fires will occupy 90 percent of firefighters' time in the future. "The Colorado Front Range is a catastrophe waiting to happen, and there isn't a whole lot we can do about it," except educate people to the danger, he says.

Because regulatory control there is often resisted or ignored, Hart finds education is his strongest tool. "We can change behavioral patterns," he says, "but until we give

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KAREN WATTENMAKER/BOISE NATIONAL FOREST

Nestled on private land in the Star Gulch Fire area of the Boise National Forest, this home (above) is protected by defensible space, a foam-treated roof, and a fireline—a deep trench that fire is unlikely to cross. Left, this thickly forested area of Strawberry Creek in Boise National Forest was the site of an undefended house that could not be saved.

enough information to get citizens to change their attitudes, things are going to continue as they are."

Despite warnings, some homeowners insist on building with flammable shake roofs and using narrow, inaccessible driveways that lead to wooded homesites with porches facing up-slope. They stack firewood against their houses and allow conifer needles and broadleaf tree leaves to accumulate on rooftops and in rain gutters. Some of this neglect is sheer laziness, but some of it comes from an "it-won't-happen-to-me" attitude.

Colorado's Hart has heard this many times. "Some people say we're stomping on their individual rights" when they're forced to provide defensible space around their buildings, he says. Defensible space is the concept of reducing piles of debris near structures and providing a vegetation buffer to reduce the chance of fire reaching buildings.

Many people are more willing to risk fire than clear some space, Hart says. And while homeowners can do what they want, knowing firefighters will try to protect their houses, "once a home is burning," he warns, "we're going to pass on it."

"They resist taking precautions to give us an advantage in protecting their homes," he says.

By far, the two best things interface homeowners can do to create defensible space is reduce debris accumulation around their homes and get rid of untreated wood shake roofs. To this, Oakland Deputy Fire Chief John Baker adds, "Manage the vegetation." Looking out his downtown office window, Baker shakes his head at the houses hidden among the trees. "It's difficult to convince people in the area to clear out the vegetation around their buildings. They're 'out in the country' in the middle of the city."

An overlapping canopy of street trees turned the area three miles to the north into hellish kilns of death during the 1991 Oakland blaze as fire roared out of control. "The 1991 fire involved an enormous dollar loss, but only consumed 10 to 15 percent of the hill area," he says. "The rest is waiting to burn."

The increase in interface fire and the resulting struggle to educate homeowners is not just a western problem. Mike Long, chief of the Florida Bureau of Forest Protection, is also familiar with homeowners who ignore the threat of fire. "There's 900 new people a day moving into the state, mostly from the urban Northeast, where year-round fire problems don't exist."

The state's biggest fires in recent years culminated in the 1985 "Black Friday" holocaust, in which 150 homes were lost in one afternoon. Developers typically spread homes out in former pine plantations or in

Rebuilding on the Edge

Bill and Karen McClung have lived in the Berkeley/Oakland hills for 25 years. When the Oakland fire began to burn October 20, 1991, Bill was at home with their two teenaged children and Karen was in town. The fire moved with such rapidity that they were unable to save anything from their house except the clothes on their backs.

JOHN McCLUNG

Bill and Karen McClung learned valuable lessons about protecting their home from fire after the 1991 blaze.

Two-and-a-half years later, they've rebuilt their home and Bill serves on the Berkeley Fire Assessment District Commission. This city organization, supported by a $50 per year household tax, deals with homeowners, the University of California, and public land agencies to address the question of vegetation management. As one of the 3,500 families that lost everything in the fire, the McClungs still have a lot at stake. The great message to be learned, according to Bill, is that the Oakland blaze started as a brush fire. "It moved so fast that 900 houses were burning within the first hour."

Too little has changed in the Oakland hills since then. Although cities have toughened their building codes, a much more serious issue is how these undeveloped lands are managed.

Professor John Radke of the School of Environmental Studies at U.C. Berkeley estimates there are 19,000 acres of wildland in the East Bay hills. This is roughly equal to the amount of developed land in the area. Using a GIS system, he has identified 10,500 acres that possess fuel conditions heavy enough to create a fire storm.

Grazing, which controls ground fuels, is permitted within the boundaries of Tilden Regional Park. But the area next to the city, where people live, has been let go and is "wild." Since it is agreed that vegetation management is the key to avoiding repeats of the Oakland disaster, it makes no sense, Bill feels, that vast acreages are left to provide fuel for the fires everybody is sure will return. "Historically, they have burned," he says. "If public and private lands are allowed to go unchecked and uncleared, you have a wildfire in the making."

There are relatively strong fire codes in Berkeley, where the McClungs live. "Most property owners try to comply for their own sake," he says. There are rules against shake roofs, but the rules don't require retrofitting the homes in areas spared by the 1991 fire.

"Who decides to allow vast acreages in such a condition to grow out of control?" McClung asks. In his neighborhood, the fire gained strength while burning through 40 acres of brush owned by someone living in France. More poignantly, hundreds of acres which burned during 1923 in beloved Tilden Park, on the edge of North Berkeley, carry a many-decade accumulation of surface and ladder fuels near groves of highly combustible eucalyptus and pine trees. When fuels are allowed to build up, even defensible space and a Class A roof cannot prevent the loss of a home due to fire.—PS

palmetto where ground fuels are incredibly heavy. As fire moves through, the homes become part of the surface fire that feeds the burning forest.

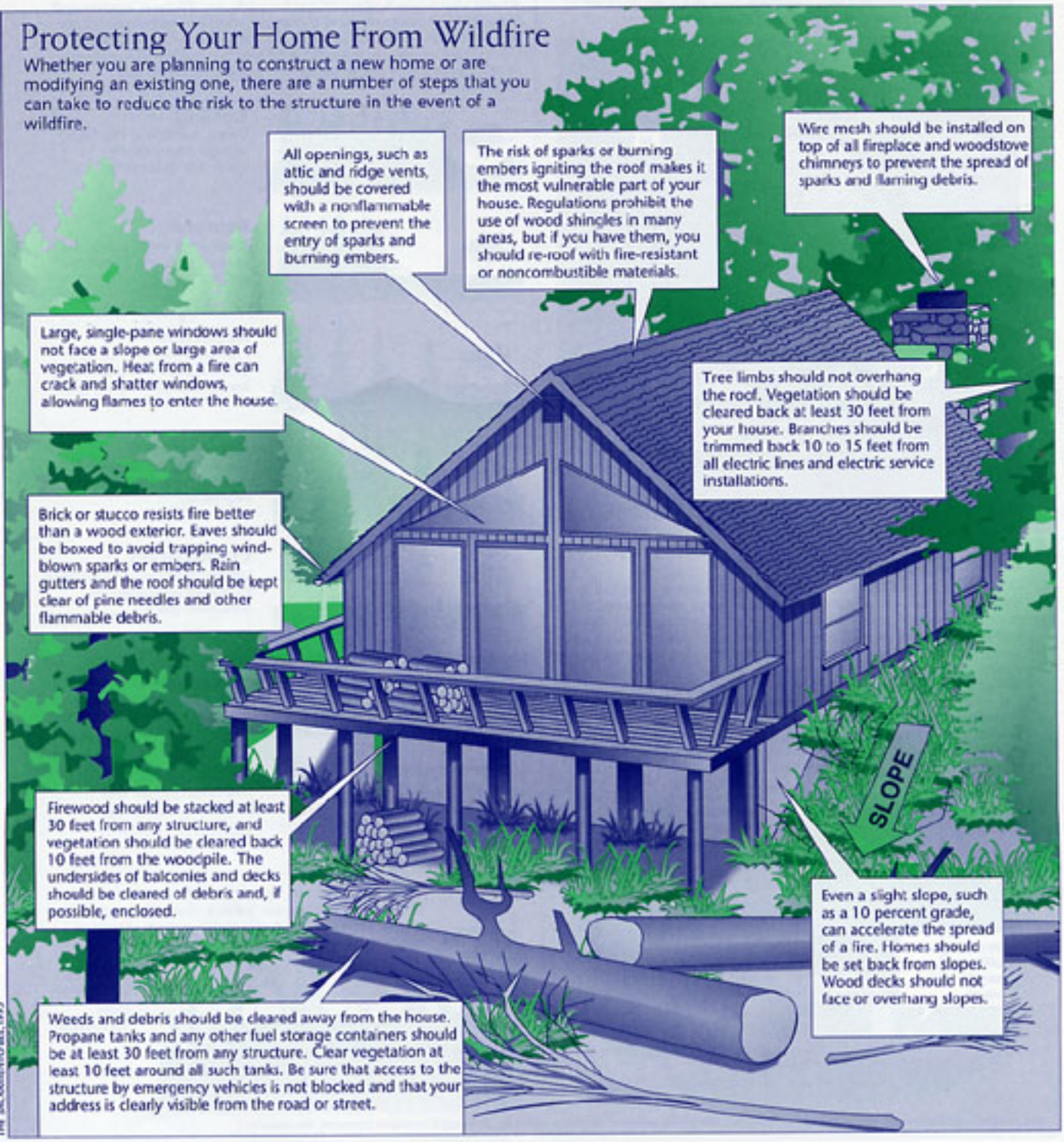
The good news for Florida is that education seems to be having an effect: The annual number of wildfires has dropped from 8,000 in 1985 to 5,000. There, as elsewhere, more than 85 pecent are caused when people improperly burn trash, fail to use spark arresters, and use matches carelessly.

"Ignorance is our greatest enemy," says Paul Ries of the Oregon Department of Forestry. "People are taking urban practices with them into the interface."

Gordon Bradley, a landscape architect in the University of Washington College of Forest Resources, sees government as the beginning of the solution. But elected officials need to know a problem exists, he says. "In subdivision standards, planning departments must accept the reality that fire is a threat to the urban/rural interface," he says. Building codes that emphasize Class A (nonflammable) roofs, irrigated buffers, and barriers between exterior sidewalls and interior spaces are needed, as is an insurance industry that insists people living in hazardous areas pay the full monetary cost of their risk.

Oakland's Baker agrees with Bradley's assessment. Making changes involves an enormous amount of public and governmental cooperation. "There isn't enough money for government to do it alone," he says. "It takes constant prodding because people look at green vegetation, or a wet winter, and think the danger has been reduced. Government has to help people realize that eternal vigilance is needed."

Each region of the country has its own unique fire dangers, but the lessons to be learned transcend geography. Southern California must deal with steep slopes and easterly Santa Ana winds that can quickly accelerate to 60 mph and blow a fire out of control. In the Idaho mountains, after 100 years of successful fire suppression, immense stands of ponderosa pine are part of a dry forest ecosystem and the increase in shrubs and small trees creates a fuel ladder that

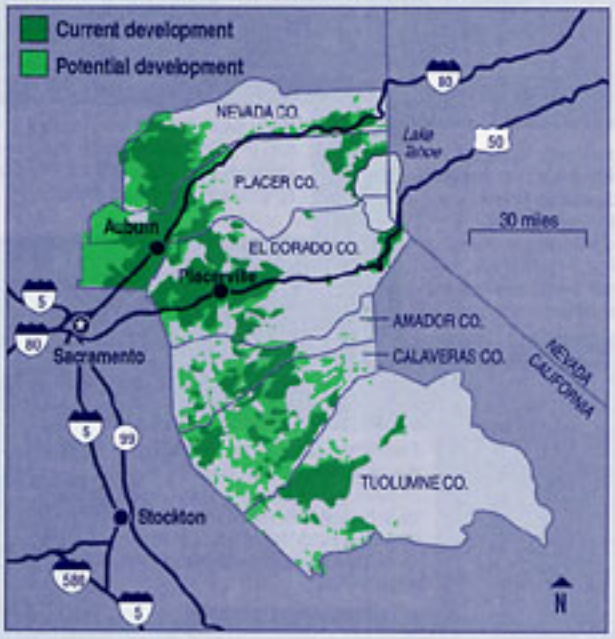


builds upward to the pine's crown. In Oregon's Cascade Mountains, mountain pine beetle and spruce budworm have added acres of dead trees to an already large fuel buildup.

How best to deal with the forests' large fuel buildup is the subject of national debate. Land managers accept fire as a natural component of the landscape that, in the past, was an effective management tool, and say it still can be as long as prescribed burning is done far from people and homes (See "Fighting Fire With Fire" on page 13). In Oakland, vegetation is mechanically removed, piled, and burned. As Baker says, "People wouldn't stand for 100- or 200-acre plots being prescribed burned," and he would hate for a controlled burn to get out of control and destroy a hillside of homes.

Development in Urban Areas

This map shows current settlement, based on 1990 census data, and potential future development patterns in central Sierra counties. The potential patterns are based on county general plans as of 1992, which are subject to revision but which illustrate how much development is allowable. Most general plans cover a 20-year period.



Access and water supply

Good access to your home for firefighters is critical in the event of a wild-land fire. You should have an alternate escape route in case one route is threatened. Roads should be wide enough to accommodate two-way traffic and large pieces of firefighting equipment. Grades on access roads should never exceed 12 percent. Cul-de-sacs should have a minimum radius of 45 feet so firetrucks can turn around. A loop or U-shaped driveway to your house is recommended. Signs with road names and house numbers should be clearly visible from 150 feet away. If fire hydrants are not provided in your area, there should be access to alternative water supplies for fire protection. Fire apparatus should be able to get within 16 feet of such emergency water supplies, which may include pools, ponds, streams or lakes.

Defensible Space

Defensible space is the area between a house and an approaching wild-land fire where the vegetation has been modified to reduce the threat and give firefighters a chance to defend the house. All the vegetation around your house is potential fuel for a fire, and the type, amount and distribution of plants can have a dramatic effect on the behavior of the fire. Your local nursery or fire protection agency can help you choose fire-resistant plants. There are three R's to remember when modifying vegetation to create defensible space: removal, reduction and replacement.

Existing
Dense, hazardous vegetation without an adequate defensible space zone.

Removal
Eliminating entire plants, such as dead trees and flammable shrubs.

Reduction
Pruning wood from shrubs, removing low tree branches or leaves, and mowing dry grass.

Replacement
Substituting less-flammable plants for existing hazardous vegetation.

Combination
Using more than one technique to modify vegetation for defensible space.

How much space is enough?

California and Nevada laws require clearing all vegetation a minimum of 30 feet around your home or other structures. But that minimum distance may not provide adequate defensible space, depending on the slope and type of vegetation. This chart offers a guide to minimum clearance:

Slope percentage	Uphill	Sides	Downhill
Level to 20%	100 feet	100 feet	100 feet
21% to 40%	150 feet	150 feet	200 feet
41% to 60%	200 feet	200 feet	400 feet

Locations to avoid

The house should be located on the most level portion of the site with adequate setback. Homes located on narrow ridges or in natural chimneys, such as narrow canyons, are particularly vulnerable to fire. Consult your local fire protection agency for more information.

Sources: California Department of Forestry and Fire Protection, Sierra Front Wildfire Cooperators, University of Nevada Cooperative Extension, Bee research

People also complain about smoke, particularly in the interface areas bordering national parks and forests. James Agee, a forest ecologist at the University of Washington, doesn't think large accumulations of forest fuels can be consumed by prescribed burning. "We've allowed the fuels to build up over too long a time," he says. "Once we open the bank vault, we're going to get a lot of smoke. It will be more than the communities can handle."

Floridians have had to get accustomed to smoke, but the case is different in Southeast because conditions are so diff ent. Florida essentially lacks hills, so no complains about smoke obstructing vie There is a constant maritime airstream.

continued on page

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Since 1965, the USDA Forest Service has maintained strong partnerships and interests in urban and community forestry. Its activities have focused on research, technical, and financial assistance. Recent Forest Service research has emphasized the development of improved procedures in selecting and growing trees in stressful urban environments, the role of urban vegetation in modifying temperature and energy demands, and the role of urban forests and parks in recreational use. P.O. Box 96090, Washington, DC 20090-6090. 202/453-9492

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For more information about ACRT, please call 800/622-2562 or write P.O. Box 401, Cuyahoga Falls, OH 44221

July 16-19—Second Canadian Urban Forests Conference, Windsor, Ontario. Contact Patricia Dolan Lewis, 2450 McDougall St., Windsor, ON N8X 3N6; 519/255-6877.

August 13-16—International Society of Arboriculture's Annual Conference, Hilton Head Island, South Carolina. Contact ISA, P.O. Box G.G., Savoy, IL 61874;217/355-9411.

September 12-16—The 7th National Urban Forest Conference, Marriot Marquis, New York City. Contact Michael Barratt, AMERICAN FORESTS, PO Box 2000, Washington, DC 20013; 202/667-3300.

September 27-29—"Branching Out From Arboriculture to Urban Forestry," annual training conference of Pacific Northwest chapter, International Society of Arboriculture, The Resort at the Mountain, Welches, OR. Contact the Pacific Northwest ISA office, 206/784-1945.

October 2-4—Annual meeting of Mid-Atlantic chapter, International Society of Arboriculture, Williamsburg, VA. Contact Marc Teffean, 410/479-5757.

Living with Fire, *continued from page 34*

smoke never accumulates in inversions. And the moist climate allows fire prescriptions year-round.

Much of Florida's industry was once in cattle and timber, so the state has a long history of using fire to stimulate feed or clear brush and now encourages prescribed burning. "If we can reduce fuels," says Long, "we stand a better chance of suppression." Landowners can burn for agricultural or silvicultural reasons and homeowners can burn yard trash if the barrel or pit is covered with screen. Florida has stringent open burning laws: No one can burn without a Department of Forestry permit. A state program teaches burners to prepare a management plan, do smoke modeling, use weather forecasts, and learn public relations to inform their neighbors of the importance of reducing accumulated fuels.

Some positive steps have been taken in controlling fire in the interface. After many hydrants ran dry during Oakland's 1991 fire, the city now requires a minimum flow of 1,500 gallons/minute, up in some instances from 500 gallons/minute. Most areas now require utilities in the interface be buried.

No matter how prepared we are, fires will happen by sheer accident, even in safe areas. In Icicle Creek, site of the Hatchery Fire in Leavenworth, Washington, 12 homes were lost when the fire indiscriminately moved through. "Homes that were not defensible didn't burn and those that shouldn't have burned, did burn," says Ferris.

KAREN WATTENMAKER, BOISE NATIONAL FOREST

Conifer needles on roofs are one of many fire hazards that can be avoided.

Baker likens failing to provide defensible space to building a house of match books and putting it in the fireplace. "We need to give homeowners a *chance* to survive fire," Hart adds. "That's the best we can hope for." UF