local stories

Catching fire

Wildfire season heats up in the American West

By Alastair Bland

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A plume of smoke rose from the woods early in the afternoon of Wednesday, Sept. 9, last year. Gary Rose was on his way home to his rural house in Mountain Ranch, Calaveras County, California, about three hours southwest of Reno. His wife, Monika, called to ask if he could see the fire.

"He told me it was over the ridge, on the Amador side, and that it wasn't coming our way," she recalled

By the next day, however, the plume had grown larger and closer, smearing the sky a rusty, smoky brown. That afternoon, the Roses, along with two of their three adult children, packed their belongings. Their unease grew into a frantic rush as the fire moved closer and closer.

In the morning hours before sunrise, they piled into the truck as, behind them, the flames soared 150 to 200 feet above the ground. Rose said propane tanks could be heard exploding as the inferno claimed each new home in its path.

"I could hear the fire breathing," she said. "It was like a dragon coming down the mountain, and if it wanted something it took it."

The Butte Fire eventually burned 70,000 acres, destroyed hundreds of homes and took two human lives. The Roses were allowed to return after nine days. They were lucky. Their home, and their small herd of cattle, survived the fire. A team of firefighters had, it turned out, camped on the property, using it as a base to try to defend the surrounding region. Their success was only middling. Within a half mile of the Rose property, 11 neighbors' homes were destroyed—about a 50 percent rate of loss.

Rose said the devastation was almost surreal.

"They were totally gone," she said. "It was eerie, like a war zone. The trees were all blackened and standing like a charred cathedral, and where the houses had been, there was nothing left at all—nothing, not even pieces of metal."

2015 was one of the most destructive fire years ever. A record-setting 10 million acres of the United States—mostly in Alaska and other Western regions—went up in flames.

"We no longer have fire seasons—it's more of a fire year now," said Mike Lopez, a veteran firefighter with the California Department of Forestry and Fire Protection who currently serves as president of Cal Fire's Sacramento-based firefighters' labor union.

To Lopez and many others, it's clear that climate change is driving longer droughts and warmer conditions that are pushing the West into a new era of bigger, hotter fires.

"The forecast is that this is the new normal," Lopez said.

Demographic trends are also troubling. Millions of Americans now live in areas prone to catching fire, and outward development from urban areas continues to plant new homes deep in the dry woods.

Now, after nearly five dry years, the West's forests are perhaps as likely to catch fire as they've ever been/ Tens of millions of trees killed by the drought are ready to burn. Decades of fire suppression practices have also contributed to the woodland fuel load, allowing underbrush to build like kindling in a campfire ring.

"California has always been a flammable place," said Jens Stevens, a post-doc plant ecologist at the University of California, Davis' John Muir Institute of the Environment. "What's different today is there's evidence the forests are denser than ever before. This is going to create bigger, hotter fires."

Thinning out that fuel load is a top priority for forest managers hoping to avert disastrous fires—but there may not be time. Already, record-setting heat baked the West in June, and it's likely the summer will see furnace-like conditions in the months to come. With large fires already burning, fire officials are already facing what could very well blow into the worst fire season in regional history.

The smoke from the 2015 Butte Fire as seen from Gary and Monika Rose's property. The fire burned 70,000 acres.

Quest for fire

Fire has always burned through the hills and mountains of the West. Some plants, like manzanitas, depend directly on the intense heat of fires to activate seed germination. The lodgepole pine, too, needs fire to open its pinecones. Some believe the landscape as a whole benefited from regular fires, which cleared away dense underbrush and allowed animals to use the area. The heat of the flames generally had little negative effect on most adult trees, protected by thick bark and internal water content.

The entrance of European Americans into the landscape abruptly changed the way fire plays into forest ecology. By the 20th century, people became extremely effective in putting out fires. Andrew Latimer, an associate professor of fire ecology and plant biology at UC Davis, said this change in fire patterns can be seen in tree ring data, viewable in the cross sections of old mountain conifers.

"You can see the scars of fires, every six years, 10 years, 20 years," Latimer said. "Then, starting around the late 19th century, early 20th century, it just stops entirely."

For almost 100 years, local and state fire officials and the U.S. Forest Service extinguished fires aggressively and efficiently across the West, and—for a time—Americans had conquered one of the most formidable forces of nature.

The trouble is, in the absence of fire, the woods grew thicker.

"You had all this fuel building up on the forest floor, with branches and needles dropping and just staying there and piling up," Latimer said. "There were also many trees that would have been killed before but were able to grow up, so you had all these medium to large trees and a forest that was much, much denser."

Eventually, so much biomass had accumulated in the West's forests that even the advanced fire extinguishing strategies and technology of the 20th century could not subdue the force of fire anymore. Fire suppression programs had, in effect, backfired. Latimer said an abrupt uptick in wildfire acreage began in the 1980s and 1990s. The 1991 Oakland hills firestorm, dubbed the Tunnel Fire, killed 25 people and destroyed 2,900 buildings. Twelve years later, over the course of several days in October 2003, the flames of the Cedar Fire consumed 273,000 acres of San Diego County, burning 2,820 buildings and killing 16 people. In 2008, so much of northern California went up in flames that many wines produced that year tasted like smoke. In 2012, the Rush Fire scorched 44,000 acres in northwest Nevada and another 272,000 acres on the California side of the border. That same summer, one of the largest wildfires on record—the Holloway Fire—burned more than 400,000 acres in Nevada and Oregon. Also, that year was the Long Draw Fire, which burned more than half a million acres in Oregon.

In the years since, wildfires have remained the scourge of summer. An analysis by the Sierra Nevada Conservancy found that wildfires today are on average nearly five times bigger than the average fire in the 1970s. Nationwide, the fire season is more than two months longer than it was in 1970, and United States wildfires today burn twice the acreage each year that they burned in the 1980s.

Nevada, according to Paul Carmichael, a firefighter who handles public relations for the Nevada Division of Forestry, has been lucky.

"We've pretty much dodged the bullet," he said. "We've got lots of fuel buildup, and we have dry conditions, but we haven't seen the big fires like California has. It's been a matter of luck."

But it's only a matter of time before Nevada's woodlands go up in flames. The massive tree mortality that has swept the West has placed Nevada, like California, in a very dangerous situation. Dry, warm weather for almost five years has killed tens of millions of trees, with the deluges of March being too little too late. Estimates by Cal Fire and the U.S. Forest Service have pegged the mortality at more than 60 million trees in California alone. Twenty-six million, officials have reported, are believed to have died in just the past nine months. Many of the trees were first weakened by drought stress and finished off by bark beetles, which have thrived in California and Nevada in the dry, warm conditions.

Carmichael said Nevada's woodlands have been affected just as severely as California's, from the Sierra Nevada to the sagebrush country to the lodgepole pine forests farther east.

Firefighter Kyle Jacobson, with the U.S. Forest Service's Lake Tahoe Basin Management Unit, said tree mortality in the Sierras has not occurred in an even distribution. Rather, there are locations—some of them miles from access roads—where trees have died in unison across areas as large as hundreds of acres.

"In places like these where we have tons of dead and downed trees, it will be almost impossible to put fires out," Jacobson said.

Steve Burns, a fire chief with the Forest Service in South Lake Tahoe, almost lost his home in the 2007 Angora Fire.
PHOTO/DARIN BRADFORD

Across the West, fire crews are laboring to thin this fuel load. The simplest approach is mechanical thinning—basically cutting down small trees and removing them from the woods. However, mechanical thinning, which involves men and women on foot in the woods with chainsaws, can be brutally laborious. Carmichael said thinning the state's overgrown forests is a monumental task that could be too great for the labor available in Nevada.

"There is only so much machinery and manpower out there to reduce the fuel load," he said.

The other option for reducing fire danger is prescribed burning—the practice of intentionally starting a fire in order to subsequently control fire. This approach involves less labor than mechanical thinning. There may be a little prior chainsawing to prime the area and eliminate exceptionally dense patches. Then, fire itself is used to do the brunt of the work.

Prescribed burns are generally set in spring or fall, said Carmichael—cooler times of year when fires are easier to keep contained. However, prescribed burns come with risks. The smoke, for one thing, can be a health hazard for people in the area, and the air pollution is considerable.

Prescribed burns can also get out of control. The May 2000 Cerro Grande Fire of New Mexico began as an intentional burn started by the National Park Service. The blaze was intended to clear the underbrush from a small patch of woodland—about 900 acres—but got way out of hand. It wound up burning for two weeks, consuming 48,000 acres and destroying hundreds of homes. The damage plus the firefighting bill ran to nearly a billion dollars.

In many places prescribed burning is not an option at all. Too many people have built homes in the forests, making the risk of repeating the Cerro Grande disaster too great.

"In some areas, the property values are so high, you just can't start fires," Jacobson said.

The challenge facing firefighters and forest managers is to thin out the fuel load of the state's woodlands to a point where huge fires are not the constant hazard they are now.

"But we're a long way from that," said Steve Burns, a South Lake Tahoe fire chief with the U.S. Forest Service. He said that with strict limits on logging and the safety issues associated with controlled burns, drought induced tree mortality is outpacing the Forest Service's ability to thin the forests—and it isn't likely that forest managers will get a handle on the problem anytime soon.

"With the fuel load out there, we're going to be seeing these mega-fires for years," he said.

Burns almost lost his South Lake Tahoe home in the 2007 Angora Fire, which destroyed 254 other homes in the area. In the past 25 years, more than half of new homes in the United States have been built in areas of woodland or other vegetation likely to catch fire, according to the research firm Headwaters Economics in Montana. Nationwide, 15 million homes are now at risk of burning in wildfires, U.S. Forest Service officials have estimated.

The number of homes built in the danger zone continues to grow as urban areas sprawl into woodland and wilderness—an unofficial land designation that fire and forest managers call the wildland-urban interface, or WUI, pronounced "whoo-eeh."

"We used to see fires of 100,000 acres that would destroy one or two homes," Lopez said. "Now, we might have fires that are 10,000 acres burning 100 homes."

Carmichael said homeowners in the wildland-urban interface are encouraged to keep a 30-foot cleared buffer between their homes and the surrounding vegetation. Junipers, also, are not a wise choice of landscaping trees. Their oil content makes them extremely flammable.

"We call them green gasoline," Carmichael said.

Controlling vegetation growth is what helped save the Rose household in Mountain Ranch. Monika Rose said she and her husband always kept the acreage surrounding their home trim and tidy. The constant grazing of the cows and their goats helped, too.

But Rose said she knew the mountains around their home would eventually catch fire.

"We'd seen the heavy undergrowth and the thick trees, the amount of fuel and all the dead trees," she said. "We knew the danger was real.

Some of her neighbors, she said, were not so careful. "They were right under the trees, and the very thing that they loved, the beauty of the forest, actually caused their undoing."

Fire in the sky

The winter brought heavy precipitation. Deluges of rain fell in January before more downpours arrived in March.

Meanwhile, snow blanketed the higher elevations, but Lopez said this winter's moisture didn't do much good.

"All that rain did was delay the fire season a month or two," he said.

In fact, the heavy March rains prompted growth of thick grasses that, by May, were already turning brown—the color of concern for firefighters. By June, the fire season seemed to be in full swing, with fires burning all over the state. The large Erskine Fire, for example, consumed almost 50,000 acres of forest in the mountains near Bakersfield and killed an elderly couple.

As for the heavy blanket of snow laid over the West in the winter, it is nearly gone—melted by scorching spring temperatures. This is just one of many indicators that the climate is warming. Already, 2016 is shaping into a record heat year—just as 2014 and 2015 were.

Warming trends seem to be causing the mountain tree line to move upward, resulting in forests at elevations higher than they grew in the past, according to researchers. In a study published last summer, scientists with UC Davis' John Muir Institute of the Environment reported that fires are now burning higher than they did in the past. They reviewed data extending back more than 100 years. Fires, they found, rarely burned above 8,000 feet before 1980. Now, several fires each year burn in this subalpine zone, thanks to increasing fuel load and decreasing moisture levels.

Another change sweeping the landscape of Nevada is the takeover of invasive Eurasian cheatgrass. Carmichael said this grass not only burns easily but colonizes scorched land more rapidly than native grasses. Thus, he said, it is turning into the cause, as well as the result, of Nevada scrubland fires.

Scientists, officials and firefighters all agree that the era of indiscriminate fire suppression must end. The practice simply doesn't work. Fires can only be kept out for so long before they erupt again. Indeed, many firefighters and scientists want to see fire returned to the landscape.

"We really want to reintroduce prescribed fire," Carmichael said.

But how to return fire to a landscape that is so densely packed with fuel without disastrous consequences is the foremost challenge. Stevens said that fires burn through a healthy forest every 15 years or so. Some scientists and forest managers believe that, eventually, fires could again burn on such a cycle. Meanwhile, rural homes and communities could be protected by buffer perimeters of intensively thinned woodland.

However, in spite of prevailing opinions among scientists and managers that fire should be allowed to burn at some uninhibited level, fire suppression remains standard. Latimer said virtually every fire that can be put out is put out. This practice causes more problems than it solves but remains the status quo.

"The trouble is, if you let a fire burn, you can't always know what direction it will go," Latimer said. "There's always this risk that it will get out of control if you let it go."

In Mountain Ranch, the house of the Rose family was spared once, but the danger remains.

"There's still tons of fuel left out there to burn," Rose said. "There are dead trees all over, still just waiting for the next fire."