

FORESTS

FALL 2003 VOL. 7/NO. 3

Providing renewable resources for our quality of life

Forest Death in Southern California: A CRISIS THAT DIDN'T HAVE TO HAPPEN

**HOW TO MITIGATE FIRE RISK,
RESTORE FORESTS**

**DEBUNKING FOREST MANAGEMENT
MISCONCEPTIONS**

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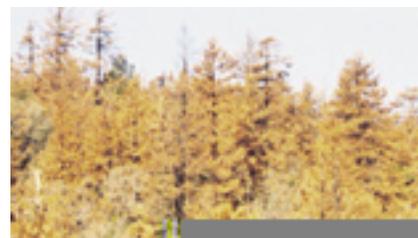
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FORE

Providing renewable resources for our quality of life

here is no question that what's happening in the mountains of Southern California near Lake Arrowhead is a tragedy.

The forest is being wiped out and people live in fear.

The question is, what will we learn from this devastation and how will we respond?

Surveys show that the public strongly supports management activities that improve forest health. And there is ample proof that leave it alone mentalities have horrific results for forests.

Yet some activists still cling to zero-cut ideologies, while others have begrudgingly accepted what they call "appropriate thinning" only around communities. They are unwilling to protect the entire forest, a position that contradicts the very purpose they claim to own.

Why acknowledge that forests are choked with fuel and need thinning but insist that only an infinitesimal percentage of the land be treated? As if the rest of the forest – and the wildlife and watersheds in it – aren't worthy of our attention.

We must protect our communities first. But thinning around homes is not a cure-all. The only way to live safely in a forest is active management to make the entire forest healthy.

Thinning is an environmentally sound forest-restoration strategy, and it can pay for itself by removing some trees that can be used for products we all need. Yet activists seem intent on putting out of business the only people who can harvest and process trees without costing taxpayers billions of unbudgeted dollars.

Southern California once had the forest industry infrastructure to deal with these issues. In the 1950s, the Wetsel and Oviatt families opened a mill in Redlands that played a key part in processing trees harvested from the San Bernardino Mountains. In the 1980s, however, policies that prevented harvesting in the area forced the closure of that mill. Ironically, disposing of the wood now being removed from the forest is a major challenge for these communities.

Recently, Wetsel-Oviatt announced another mill closing hundreds of miles away, near Sacramento. The mill has been operating for more than 60 years providing family wage jobs producing lumber used to build homes. Nearby, federal forest managers grapple with declining forest health and catastrophic fire danger in the Sierra Nevada. Now there is one less mill to receive the wood, placing an increased burden on the federal government and taxpayers to figure it all out.

Our forests can be restored. But as long as we focus on why we can't rather than why we should manage our forests, invaluable forest resources and precious human lives remain at risk.

As a child growing up in Southern California, trips to Lake Arrowhead meant days enjoying the outdoors in mountains with towering trees. I hope the picture of today's devastated forest will help foster the long-standing commitment necessary to create a healthy forest for future generations. **■**

Donn Zea is president of the California Forest Products Commission (www.calforests.org).

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Facing the Fire Danger

Unmanaged forests pose the greatest risk



BY PETER BRIERTY



Californians are facing the worst predictable disaster in state history. Our forests are tinderboxes of fire fuel waiting to be ignited. The mountains of San Bernardino County, where I am fire marshal, are a prime example.

Everyone who comes here says the same thing: “I didn’t know it was this bad. It’s the worst I’ve ever seen.” There is so much fire fuel here it’s almost beyond comprehension. We’ve got houses five or 10 feet away from each other – not five or 10 acres from each other, like some forest communities. Hundreds of thousands of acres are ready to burn an urban housing system that accommodates around 50,000 residents, a number that doubles with weekend visitors.

There are 150-foot-tall dead pine trees everywhere – between houses and literally on top of one another. Trees ready to explode – horrific fire hazards. We have tree densities up to 10 times what scientists say they should be, and an intermingled urban population. We have steep terrain, a circuitous road system and limited evacuation possibilities.

What to do? We’re preparing for the worst. Fuel reduction is my top priority. We’re cutting trees day and night to reduce the number available for fuel-hungry fires. And still it may not be enough to ward off disaster.

“We need to reorient firefighting policies toward fire mitigation through forest management.”

Part of the problem is that no forest products have been taken from the mountain in 20 years. Without regular harvesting, the infrastructure to deal with the level of timber volume we now have has disappeared, and the forest has deteriorated. Today there is no local capacity to cut trees, or to haul or mill them once they're down.

We're getting help. We started by contracting with six area tree-removal companies; now we're working with upwards of 30 from throughout the state. Still, the sheer volume poses significant challenges. For example, what to do with the trees once they're cut? At one point, up to 30 log trucks a day were leaving the mountain. But timber prices have since dropped and dead trees lose their value quickly, so even though we're cutting more trees now, only six or eight trucks leave each day.

So the logs are just piling up. We've created staging areas, but there's no place to take the logs except to our solid waste-management system. That system used to handle about five tons a day. But we're dealing with 400-500 tons of waste wood daily. San Bernardino County has added new Air Curtain Destructor incinerators that burn the wood at extremely high temperatures and produce very little air pollution. A fan blows air over the top of a massive firebox, and the air catches smoke and small particles, blowing them back into the fire and fanning the flames. But even this capacity isn't enough.

“First-strike” response planned

Our plan, in case fire breaks out, is to throw everything we have at the first incident. Instead of sending one engine, we will send six engines from multiple agencies. Firefighters all over the mountain have been trained in wildland firefighting and structure protection. The U.S. Forest Service, California Department of Forestry (CDF), and local firefighting districts are working and training together. CDF has co-located engines with local fire departments. Fire chiefs from lower-elevation districts are active in response planning.

The problem is that we're not set up to mitigate disasters – only to take care

of them once they happen. The Federal Emergency Management Agency (FEMA) is not set up to prevent fire emergencies, but it should be. Once the fire starts, FEMA will give us everything we need. But I could use 500 tree cutters now rather than 5,000 firefighters later.

Tens of millions of dollars will likely be spent to fight a catastrophic fire if it breaks out here. That money – and far more in terms of property ruined and natural area devastated – could be saved if only our policy makers would design a fire mitigation policy that imitates our preparations for flooding. We spend millions on preventive flood control channels, not on sand bags after the event. Yet with fire, we focus very little on prevention.

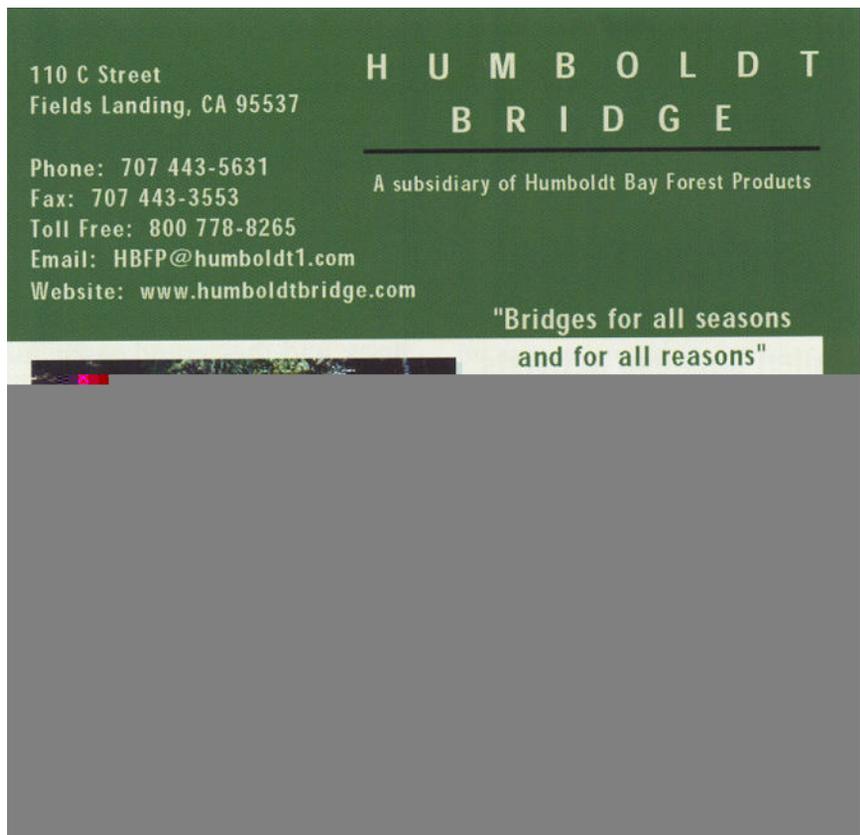
As bad as things look right now, I am seeing the beginnings of the kind of cooperation that may prevent wildfires in

the future. I am witnessing the best prevent emergency response cooperation in my 25 years in the business. The Mountain Area Safety Task Force has everyone from the U.S. Forest Service and California Department of Forestry, to the California Highway Patrol and Fire Safety Councils all at the same table, talking about emergency response issues, fuel hazard issues and reforestation.

But our forests need to be rid of the excess fuel that feeds wildfires. We need to help our on-the-ground efforts and reorient firefighting policies toward fire mitigation through forest management.

For now, we're dealing with the fuel level as best we can. We can only hope we're doing enough. 

Peter Brierty is Fire Marshal for San Bernardino County.



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Recovering from Disaster

Restoring the forest means acting now



BY THOMAS M. BONNICKSEN, PH.D.

“Forest management stalled because activists, government officials and politicians engaged in endless debates.”

Bark beetles and other insects are destroying America's forests on a scale never before seen. Their destructive outbreaks used to affect only remote areas, but not anymore, not with people building more homes in forests.

Bark beetles are wreaking havoc in the San Bernardino Mountains. About 90 percent of the pine trees will be dead when the beetles end their rampage. Then, Lake Arrowhead and other communities will look like any treeless suburb of Los Angeles. Whole neighborhoods are already barren where houses once hid in a thick forest.

This disaster affects everyone who cares about America's forests, but it is especially serious for the people who live and recreate in these mountains. Dead trees are falling on houses, cars and power lines, and they could easily fuel a catastrophic wildfire.

The path to crisis

We know how we got into this fix: forest management stalled because activists, government officials and politicians engaged in endless debates on how to look after our forests. Meanwhile, trees grew and forests became thicker because they care nothing about politics. Now insects riddle our trees with holes and wildfires turn them into charcoal.

**“Planting trees is the easy part;
ensuring the future of the forest is not.”**



Much of the forest around Lake Arrowhead has already succumbed to the bark beetle. From left: California State Sen. James Brulte, U.S. Secretary of Agriculture Ann Veneman, noted forestry expert Dr. Tom Bonnicksen, Third District Supervisor Dennis Hansberger, and U.S. Rep. Jerry Lewis toured and discussed the San Bernardino Mountain forests in mid-August.

The debates continue, and bark beetles have taken control of the San Bernardino Mountains. It is time for people to shape the destiny of their forests instead of leaving the decision to mindless insects.

Sadly, this epidemic was predictable and preventable. Specialists representing many interests and agencies came together in a 1994 workshop to do something about the unnaturally thick forests in the San Bernardino Mountains. They knew that communities like Lake Arrowhead were in imminent danger from wildfire. Unfortunately, bark beetles got there before action was taken, so the forest is lost, and the fire danger is more critical.

The team recommended a fuel reduction program that gave priority to watersheds and other high-risk areas throughout the forest. This included fuel breaks, defensible space, and sound forest management – tenets of federal initiatives now being championed to address our national forest-health crisis. They also wanted to protect the public with improvements in fire alerts and traffic control. Protecting healthy old trees was important as well. Finally, they emphasized the need for public-private partnerships because taxpayers alone cannot afford to solve the problem.

Communities throughout the West, especially in Southern California and the Sierra Nevada, could avoid disaster if they adopt these widely accepted recommendations.

Instead, most efforts focus on thinning narrow strips of forest around communities. Residents think swarms of chewing insects and roaring wildfires coming in from surrounding public lands cannot penetrate these flimsy barriers. They could not be more mistaken. The best defense is a well-managed forest.

Unfortunately, it is too late for the San Bernardino Mountains. The original pine forest will be gone soon. We must start over, and we must do it fast before a wildfire turns what's left of the forest into brush and communities into rubble.

The road to recovery

The recipe for restoring San Bernardino forests is simple. Cut the dead trees, remove or chip the slash to reduce fuels, and leave enough snags and logs for wildlife. Then thin what's left to ensure that surviving trees grow quickly and to protect them from fire because they will become old growth in the future forest.

Next, begin rebuilding the forest by planting native trees in gaps left by beetle-killed trees. Additional gaps will have to be opened and planted at different times and places to ensure that the restored forest has groups of trees of different ages. This will take five or more decades. By then, seed from adjacent trees will fill new gaps and the forest will look relatively natural since some sites will grow trees 120 feet tall in 50 years.

Planting trees is the easy part; ensuring their future – and that of the forest – is not. It requires continued active management.

This would be natural forestry, not plantation forestry. That means using nature as a guide for creating a healthy, diverse forest that is fire, insect, disease and drought resistant.

That leaves only one question: how do we pay for it?

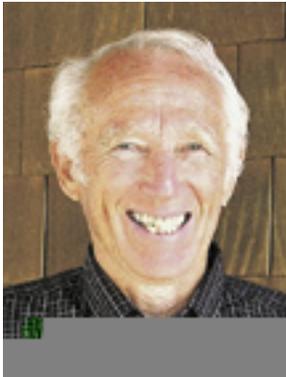
Redirecting tax money toward restoring San Bernardino Mountain forests would help, but there isn't enough to do the job. Success requires that government and the private sector work together. That means private companies harvest the trees needed for restoration and in exchange they get to sell wood products. This would significantly reduce the tax dollars spent per acre to restore the forest. It is just common sense – why allow insects or fire to wipe out our forests when we can use them in a way that also restores them?

We should not doom later generations to the unending cycle of destruction from fire and insects that we see today. Let's stop the debates, take action now, and do what is necessary to protect and restore our forest heritage. **❶**

Dr. Bonnicksen is a professor of forest science at Texas A&M University. He has studied California forests for more than 30 years, is the author of "America's Ancient Forests" (2000, John Wiley & Sons) and a board member of the California-based Forest Foundation.

Myths Distort Forest Debate

Truth gets lost in smokescreen



BY DOUGLAS LEISZ

“The true cost of inaction should not be hidden from the public.”

After spending our careers managing the nation’s public forestlands, the National Association of Forest Service Retirees are dismayed by the appallingly unhealthy conditions in our priceless forestlands.

While there are positive efforts to promote healthy forests, too often views based on science and experience are drowned out by individuals who foster serious misconceptions about our forests.

I must challenge some of these misconceptions – they mislead the public and hinder the implementation of sound forest policies.

Perhaps the most persistent misconception is that forests should be undisturbed by humans. Last summer’s wildfires, which consumed more than 6 million acres in the West, dramatically demonstrate that forests left alone become overgrown and more susceptible to insects, disease and fire.

Another misconception is that our overgrown forests are simply the result of past fire suppression efforts. A close examination of the history of our Western forests shows this is untrue – our forests are overgrown due to a combination of factors, not just fire suppression. Substantial fluctuation in climate and reduction in forest harvests have contributed significantly to today’s excessive forest fuels.

Insects thrive in overcrowded forests. Hordes of bark beetles and the spruce budworm are ravaging forests in Alaska, Arizona, Colorado and California. The most devastating losses may be in Southern California where the mixture of homes and dense forest set the stage for catastrophic losses.

In July 2001, bark beetles were observed attacking pine trees in the San Jacinto Mountains of Southern California. By spring 2002, entire hillsides had turned red-brown, signifying widespread infestation in the dense forests of moisture-stressed trees.

Today, millions of dead trees cover 350,000 acres of Southern California forest leaving an alarming accumulation of fuel and an enormous fire threat in the communities of Idyllwild, Big Bear, Lake Arrowhead and Mount Palomar. Many homes have lost magnificent trees to beetles, and owners are faced with huge costs for removal, cleanup and restoration.

“The real problem is the lack of forest management.”

It doesn't have to happen this way. For most of the last half-century, Southern California had an economical way of dealing with insect infestations. The California Forest Pest Council monitored tree health and beetle populations – infested and high-risk trees were removed quickly. Local lumber mills processed the beetle-killed trees, minimizing costs and risks. But active management and a local infrastructure are now gone.

We must learn from this devastation lest other forests and communities face similar situations.

The problem is not the bark beetles or cyclic drought – they are always factors. The real problem is the lack of forest management.

Increasing tree density will inevitably create an overstocked forest that is easy pickings for endemic insect populations. Without active management, fire can wipe out the bug-killed trees.

This is nature's way of correcting overly dense tree stands and starting a new forest – but it doesn't take into consideration

continued on page 19



Healthy, productive forests require active management, whereas ...



Forests that are left alone become over-crowded, and more susceptible to insect infestation, disease ...



And, ultimately, devastating wildfires that burn super-hot and scorch the soil.



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Ensuring Future Forest Health

Natural treasures must be a priority



BY U.S. REP. JERRY LEWIS (R-CA)

Growing up in San Bernardino, the lure of our magnificent mountains was always present. I started catching rides up into the pine forests when I was about 13, and found ways to get up into the mountains at least a dozen times each summer.

As a swimmer, I looked forward to my first dive each summer into the beautiful waters of Lake Arrowhead. I remember how cool the air and water felt, and how beautiful the moon looked over the lake on summer evenings. The rustling of the pines, the clean smell of the high mountain forest – I share all these memories with millions of people who have grown up in Southern California.

Today, our beautiful forests in the mountains of Southern California are in danger. The 2000 and 2002 fire seasons were among the worst in the past 50 years. The fire threat is even worse this year because of the severe drought conditions and the bark beetle infestation. These dangerous conditions have led to dense undergrowth and millions of dead trees that could, with one lightning strike or engine spark, ignite into a catastrophic wildfire.

As we have seen in Arizona and New Mexico, such fires threaten lives and can do irreparable damage to the soil. When a wildfire crowns or spreads to the tops of the trees, it burns so hot that the



Healthy forests present numerous recreational opportunities and provide scenic get-aways for urban residents

ground below becomes sterilized, killing any hope for future forest growth.

It is unthinkable that we would leave any of our mountain residents or visitors in danger for their lives. It is unimaginable that we might lose our beautiful mountaintop forests forever. For this reason, I have made this issue my number one priority here in Congress.

I am pleased to announce that the House Interior Appropriations Subcommittee agreed to allocate \$10 million in the coming fiscal year to augment the Forest Service's efforts in the San Bernardino Mountains to reduce the bark beetle problem. At my request, Congress also directed the Federal Emergency Management Agency to utilize

“We must have an active management plan that engages all who cherish this natural jewel.”

\$3.2 million in unspent emergency grant funds to assist private homeowners in dead tree removal.

Looking to the future, I am an enthusiastic supporter of the President's Healthy Forests Initiative to improve wildfire protection by reducing hazardous fuel loads. The program is exactly what our local forests need because it would give priority to the “wildland-urban interface,” municipal watersheds, and areas affected by insects and diseases.

In May, the House approved H.R. 1904, the Healthy Forest Restoration Act. This bill gives federal land managers and residents the tools to respond to the type of forest health crisis we are now facing. The legislation encourages the timely implementation of scientifically supported management activities to protect the health and vibrancy of our federal forest ecosystems and the communities that surround them.

All of us who live, work and play in our national forest know that we MUST have an active management plan that engages all who cherish this natural jewel. We MUST build on the commendable efforts of local community leaders, the Forest Service and the state, to come together to address the emergency conditions we face. We cannot step back and hope the forest will heal itself. This is an urban recreation

forest, and we must ensure that all of our activities lead to the long-term health of the forest.

I have represented the San Bernardino Mountains for my entire 24 years in Congress, and I have many friends from Crestline to Big Bear. I know they are the independent sort who don't like asking for government help (which usually comes with government restrictions). But I also

know that they love this forest and will do whatever is necessary to protect it. I will do my best to ensure that the federal government supports them in that quest. **■**

Jerry Lewis, a lifelong resident of San Bernardino County, represents the 41st Congressional District of Southern California, including most of San Bernardino County.

FORESTLAND MANAGEMENT

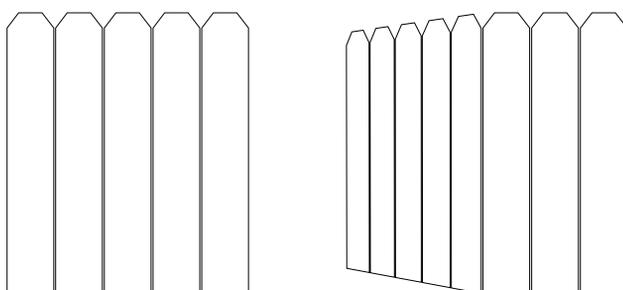
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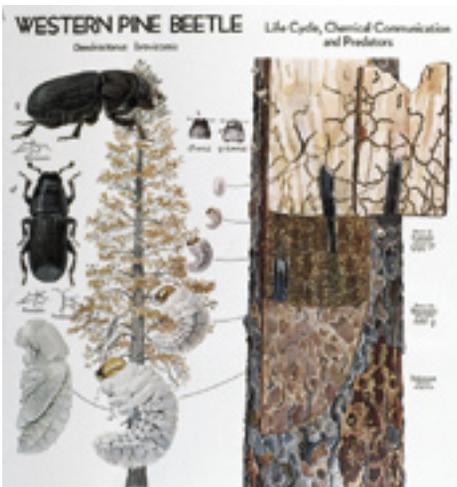
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Forests Ravaged by Tiny Terror

Overcrowded trees lead to infestation



BY PATRICK J. SHEA, PH.D.



The western pine beetle thrives in overcrowded, moisture-stressed tree stands

Forest entomologists have long noted that the western pine beetle (WPB) is the most important and destructive insect of California's forests. It is proving its power now around Lake Arrowhead and across the West.

The scientific name for WPB is *Dendroctonus brevicornis*; the genus *Dendroctonus* literally means "tree killer." The insect's tenacity makes the name particularly fitting.

WPB has a wide distribution and occurs throughout most of the western United States, parts of western Canada and along parts of the northern border of Mexico. Its two primary hosts are ponderosa pine and Coulter pine. In most areas, WPB attacks and kills large, mature trees, but during severe droughts or other landscape-scale disturbances, WPB will attack and kill apparently healthy trees of almost any age.

Initial attacks are made by the female beetle and occur relatively low on the tree's trunk. From here, the attacks spread up and down the length of the main trunk of the tree. Evidence of a tree under attack is the appearance of reddish brown pitch in crevices of the bark surface. A fully attacked tree gives the appearance of being riddled from a shotgun blast.

Changes in the color of the canopy of the tree occur as the tree succumbs, and depend partly on when the tree was successfully attacked. For instance, trees attacked in June usually begin to fade by late July/early August, whereas trees attacked in August or September may not begin to fade until June or July of the following year.

Two important facts must be emphasized here: (1) once a tree is successfully attacked by the WPB, the tree is essentially dead and cannot be saved even though the canopy may still be green; and (2) once the tree has begun to fade, in all probability the WPB progeny have already emerged from that tree. If a tree is already successfully colonized (currently infested with larvae) it is a waste of time and money to treat it with some material in hopes that it will survive. If the tree has already changed color, treating it is also a waste of time and money.

The WPB has four life stages: egg, larva, pupa and adult. Its eggs are pearly white, oval and are laid in niches in the inner bark. Upon hatching from the egg case, larvae tunnel out into the outer bark where they go through four larval stages (or instars)

before transforming into pupae. The pupal stage is often referred to as a "resting" stage before transformation into adulthood.

Adult beetles are dark brown or black and average about 4 mm in length (1/8 to 1/5 of an inch). They are somewhat cylindrical, stoutly built with a hard outer cuticle. When adults emerge from the "brood tree" they bore out of the bark and leave a perfectly round exit hole on the surface of the bark.

Crowded forests threatened

The Lake Arrowhead area is not alone in suffering from intense bark beetle epidemics. Currently, outbreaks of bark beetles are evident throughout the western United States. Most, if not all of these bark beetle epidemics are the result of a convergence of a number of disturbance factors. The first and most important factor is tree density.

Overstocked stands create intense competition for limited resources, especially water, and weaken trees. In some areas, like Arrowhead, soil compaction and other human disturbances also play a significant role in reducing tree vigor and increasing the probability that a bark beetle

epidemic will occur. Finally, droughts or other landscape-scale natural disturbances probably serve as the trigger mechanism for bark beetle outbreaks. All of these conditions currently exist in most of our Southern California forests.

During bark beetle infestations there are no management strategies that can be employed to halt the outbreak, but there are preventive measures that can protect individual high-value trees. Insecticides such as cabaryl or permethrin, both registered for use by US-EPA and CAL-EPA, can protect uninfested trees from lethal attack. A number of systemic insecticides have also been tested, but to date, none has proven to be effective in preventing lethal bark beetle attack.

The return of normal precipitation and the return of tree "vigor" often are enough to cause bark beetle outbreaks to subside. However, after the epidemic abates, reducing tree density will reduce the probability of future epidemics and reduce the intensity of the tree mortality if another one occurs. **E**

Patrick J. Shea, Ph.D. is an emeritus scientist with the USDA Forest Service, Pacific Southwest Research Station.



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Taking on the Bark Beetle

Forest management can thwart attacks



**BY CALIF. STATE SENATOR
JAMES L. BRULTE
(R-RANCHO CUCAMONGA)**

What happens when you combine over-crowded trees and four years of drought conditions with an infestation of insects that are smaller than a pencil eraser?

For the San Bernardino Mountain region, that combination means millions of trees that are dead or dying in the national forests because of the pine bark beetle. If this situation isn't addressed immediately, it most likely will result in a catastrophic wildfire that could cost more than \$100 million in property damage and lost lives.

To address this crisis, I introduced Senate Bill 8, the California Fire Prevention Act of 2003, on December 2nd – the first day of the legislative session in Sacramento. The bill's goal: removing dead and dying trees in the Angeles, San Bernardino and Cleveland National Forests that have been ravaged by the beetle.

Those who have recently visited our national forests in Southern California probably have noticed many trees with fading foliage – often the first sign of a beetle attack. Trees attacked by these pesky insects usually fade from the top of the tree downward, and the needles will change from green to a light straw color within a few weeks of attack, according to the state Department of Forestry

and Fire Protection. The trees most vulnerable to attack from the pine bark beetle have been weakened by the four-year drought.

During a meeting with Gov. Gray Davis in March, I asked him to proclaim a State of Emergency within the infected area. This would allow the Department of Forestry to target unspent money from existing funds to be redirected to save our beautiful mountains. A similar effort took place last year when unused research money from the University of California system was redirected to clear out forests in Northern California hard hit by sudden oak death syndrome.

In addition to state funds, the federal government – led by the efforts of Congressman Jerry Lewis, whose congressional district includes much of the affected forests – is also offering assistance. Congressman Lewis has



**“My bill’s goal:
removing dead and
dying trees.”**

introduced legislation to redirect \$3.2 million in federal funds that went unused in the earthquake retrofit of buildings on the campus of Cal State-San Bernardino (see story on page 14).

After some discussions with both Congressman Jerry Lewis and U.S. Senator Dianne Feinstein, SB 8 may be used as a vehicle to direct monies received to ensure that funds are used specifically to battle the bark beetle.

The combination of an unnaturally dense forest, the bark beetle and the drought have created a crisis in the national forests of Southern California – a crisis that not only puts at risk thousands of acres of precious 100-year-old pine trees, but homes and human lives as well. ●

Senator James L. Brulte was elected Senate Republican Leader in April 2000 and represents Senate District 31, which includes the southwestern portion of San Bernardino County and the northwestern portion of Riverside County.

MYTHS

(continued from page 11)

the forest communities we’ve built or our dependence on clean water from forest watersheds. If we are going to live among the trees we must manage forest density long before drought and devastation strike.

California’s Sierra Nevada national forests have an annual net growth of 2 billion board feet. Nationally, forest growth is almost double removals. By not harvesting excess growth or effectively using prescribed fire to manage forests, we invite insect and disease problems, which increase fuels and risk of intense wildfire. Before the fuel buildup, smaller, less dangerous fires were the norm; today every fire has the potential to wreak catastrophic damage.

Under such circumstances, it should not surprise us when disastrous wildfires occur.

Reduce risk, improve health

There is increasing public support for thinning forests near communities. But thinning is also needed to protect forests and ecosystems away from communities. It creates healthy forests. By not thinning we are inviting unwanted legacies of more catastrophic wildfire, constant threats to public health and safety, ecosystem and wildlife devastation and damage to our watersheds.

Thinning should replicate natural processes to create a mosaic of trees

and meadows that discourage disastrous fires. It must accommodate local conditions and be implemented across broad landscapes. Thinning must accompany prescribed fire, which alone carries serious health risks and is too dangerous to be the dominant management tool. Treatments should be cost efficient and periodically maintained.

Furthermore, the true cost of inaction should not be hidden from the public. Policy makers should clearly state the losses suffered when wildfire destroys valuable timber resources, annihilates wildlife habitat and watersheds, and pollutes our water storage and delivery systems.

The job of establishing and maintaining healthy forests may be the most complex program ever undertaken by agencies managing our public forests. We must embark on this effort using proven management practices, and all the tools and scientific information available.

And we should all do our utmost to debunk the misconceptions that dominate so much of the current debate. ●

Douglas Leisz, former U.S. Forest Service associate chief (1979-82), is chairman of the National Association of Forest Service Retirees (NAFSR). This article is adapted from the NAFSR report, “Forest Health and Fire: An Overview and Evaluation,” which can be found at www.fsx.org/NAFSRforesthealth.pdf.

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How the Fire Stopped Cold

An accident yields positive results



BY PHIL AUNE

“Even the plots thinned without broadcast burning brought the crown fire down to the ground.”

Sometimes accidents happen in the laboratory – even when there is a well-designed experiment in progress. Imagine an old black and white movie picturing a dark gothic castle. The scene shifts to a white-coated professor carefully measuring a clear liquid into a beaker. A creaky noise and a black cat distract the scientist! As he turns, his sleeve brushes against the opening of a small tube dripping another liquid. In that second, two drops of the second liquid fall into his beaker. He sniffs and tastes the mixture, and voilá, that is how the perfect martini was invented!

An accident happened in a well-designed long-term forest management research project last year. The accident was the Cone Fire on the Blacks Mountain Experimental Forest. The result was not another variation of the martini, but 100-proof evidence that thinning really helps stop catastrophic wildfire.

Science in the forest

The Cone Fire burned in this 11,000-acre experimental forest in Northeast California about an hour west of Susanville. The Blacks Mountain Experimental Forest was established in the 1930s as a principle field research location to study basic silviculture, ecology and management options for the interior ponderosa pine forests of the western United States. Blacks Mountain is part of the

network of experimental forests managed by the USDA Forest Service throughout California.

Some of the early research results from Blacks Mountain include basic work in silvics and ecology, insect risk rating systems to predict mortality of pines, and a "methods of cutting" for interior pine forests. This "methods of cutting" experiment has been followed and remeasured every 10 years for the last 50 years. It is the most detailed (and ignored) old-growth study in the nation.

Spinning off the "methods of cutting" experiment, in the early 1990s, a team of interdisciplinary scientists decided to seriously consider exactly how to manage a forest for biological diversity. At that time, there were widespread calls for some form of "new forestry" or "new perspectives" aimed at reform and the concept of biological diversity.

The team asked a simple question, "How does one manage a forest for biological diversity?" They worked together and developed an aggressive experimental design centered on the hypothesis that a structurally diverse forest (multiple canopy layers) will have more total biological diversity than one with low structural diversity.

Careful planning, irrefutable results

The research design established led to a long-term experiment involving 12 individual 250-acre plots in the Experimental Forest. Six large plots were thinned leaving high structural diversity (three canopy layers) and six were established with low structural diversity (one canopy layer) after thinning. Half of the thinned plots then received prescribed burning and half were left unburned.

These plots were further split – one half was grazed by cattle and other animals, the other half was not. All thinning and prescribed burning treatments had been completed before the 2002 Cone Fire. The rest of the forest between these large research plots was unthinned.

Then the "accident" occurred in 2002 in terms of the raging Cone Fire. The aerial photos demonstrate the dramatic effects of the thinning treatments. When the wildfire reached the thinned research plots, even the plots thinned without prescribed burning brought the crown fire down to the ground. For the first 25-50 feet in from the flame front as the Cone Fire changed from a crown fire to a ground fire, some of the trees in the thinned plots died from radiant heat. The wildfire had 95-100 percent mortality outside of the thinned

plots. Less than 5 percent of the trees in the thinned, but not prescribed burned plots were killed. Researchers have not completed the final statistical analysis, but the thinned plot survival should be more than 95 percent.

Plots that had been thinned and prescribed burned had the same general results. The crown fire was stopped at the edge with radiant heat damage only. The biggest difference is that the wildfire almost did not return the prescribed burned areas. There was so little fuel left after the original prescribed burn, the wildfire simply did not burn uniformly throughout the prescribed burned plots.

Estimates are that less than 1 percent of the trees in these plots were killed by the wildfire. Of course, the prescribed burn treatment following thinning killed some trees. The most interesting data will be the difference in mortality between areas

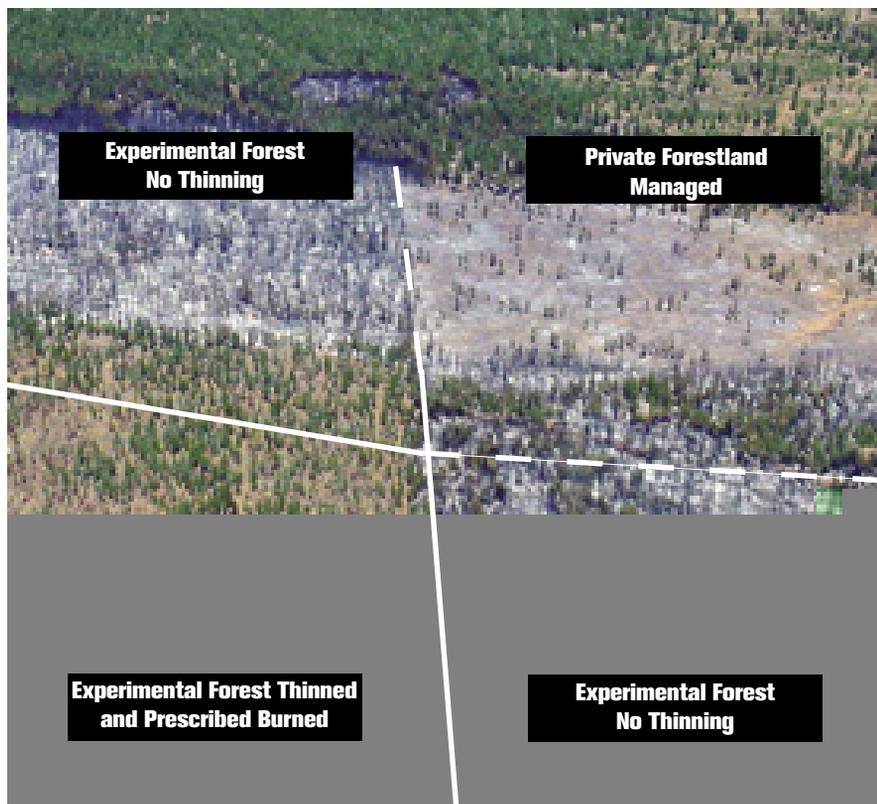
thinned and prescribed burned before the wildfire and those that only had mortality resulting from the wildfire. My guess is that the total results will be very similar and probably not statistically significant.

Long-term controlled research has not been established to see if thinning will stop a wildfire – that is almost impossible because it requires an actual wildfire reaching the experiment. The Blacks Mountain research and the accidental effects of the Cone Fire, however, offer an excellent demonstration of the effects of thinning on a wildfire.

Sometimes, accidents in the lab can lead to some interesting results. 

Phil Aune is vice president of public resources for the California Forestry Association. From 1987 to 2000, he was the research program manager for the USDA Forest Service Pacific Southwest Research Station's Redding Silviculture Laboratory and the Blacks Mountain Research Project.

Cone Fire



The Cone Fire, which burned 2,000 acres of the Lassen National Forest in September 2002, provided valuable lessons on wildfire behavior when it reached the Blacks Mountain Experimental Forest, which includes large plots that had received varying thinning techniques. The fire, which burned the area shown above from left to right, destroyed nearly all the trees in plots that had not been thinned (top left), but caused minimal destruction in plots that had been thinned (bottom left and top right). The fire regained strength upon reaching the unmanaged plot shown in the bottom right.

What People Are Saying

About the crisis in the San Bernardino Forest

"This is the epicenter nationally of forest health gone sour ... The situation we're in with the forest health, the densification, that's not about timber sales to make boards for sawmills. It's about saving human lives. It's about saving this forest for the 24 million people in Southern California that use it on a daily basis ... I'm really worried that if we don't do things and we don't do things in a hurry, we're going to lose an ecosystem, we're going to lose communities and we're going to lose a lot of lives."

Gene Zimmerman
Supervisor
San Bernardino National Forest

"It will take global perspective, with an eye toward history and an acceptance of modern ideas, to save the overly dense, parched and beetle-ridden San Bernardino National Forest..."

Dr. Thomas Bonnicksen
Professor of Forest Science
Texas A&M University
THE (RIVERSIDE) PRESS ENTERPRISE, MAY 1, 2003

"It makes you ill just to drive up there. You see brown pines sticking up like sore thumbs."

Don Townsend
CEO
Inland Empire Council, Boy Scouts of America
ASSOCIATED PRESS, MAY 18, 2003

"The bark beetle infestation is a direct result of years of inaction and refusal to manage this forest. Though some believe that the best thing for a forest is to 'leave it alone' and let nature take its course, we see time and time again that such a strategy is doomed to failure."

Donn Zea
President
California Forest Products Commission
THE (LAKE ARROWHEAD) MOUNTAIN NEWS,
MAY 29, 2003

"I've never seen tree and brush vegetation die off like is occurring down there. It's a very, very critical situation."

Jack Blackwell
U.S. Forest Service Regional Forester
THE SACRAMENTO BEE, APRIL 27, 2003

"Having a house just immersed in trees seemed to be the epitome of getting away from it all. What owners call a 'privacy screen' is actually a threat to them and me."

David Caine
Executive Director
Arrowhead Community Taskforce
THE SACRAMENTO BEE, APRIL 27, 2003

"I do believe we have let the mountain forest become overcrowded for the amount of groundwater available, and I also believe that we have a responsibility to try to preserve that which has been entrusted to our care."

Ed Smith
Lake Arrowhead Resident
THE (LAKE ARROWHEAD) MOUNTAIN NEWS,
JULY 14, 2003

"When you fly over the forest, you really see things that are truly disturbing ... [this situation] is a very good example of why the active management of forests is so necessary."

Ann Veneman
U.S. Secretary of Agriculture
LOS ANGELES TIMES, AUGUST 9, 2003

"It's very frustrating to have to live your daily life wondering if I leave the mountain, will my children be safe."

Lake Arrowhead Resident

"As trees do all the time, they're always recruiting and making new ones. Fires in the past selectively eliminated most of those trees. And without any fire in the system for a hundred years, it has been relentless recruitment, more trees competing for water, more trees are going to die."

Richard Minnich
Fire Ecologist and Professor
University of California-Riverside

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FOR





TECHNOLOGY MAPS A DYING CALIFORNIA FOREST

Modern forestry relies on advanced technology, including satellite photography like this image showing the Lake Arrowhead area in May 2003. Thousands of dead trees are shown by the reddish-brown color. Satellite imagery is so precise it can focus in on areas as small as one square meter. Foresters use satellite technology to map forestlands, measure tree height and canopy cover, identify tree species, and assess forest health when developing management plans.