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The Denialists:

Desert Flames and Wildflowers

Richard W. Halsey

I was asked a surprising question while at the 16,800 acre Horse fire in eastern San Diego County last week. In a conversation with several people about how another fire near the desert town of Yucca Valley had been fueled primarily by alien grasses, I expressed concern over the transformation of many native landscapes to non-native grasslands, a process also known as **type-conversion**. Afterwards I was asked, "Has type-conversion of chaparral really been proven to occur?"

I pointed up to a nearby hillside covered with weeds. "It's happening up there," I said. "Areas that have been repeatedly burned lose nearly all their native species and end up a monoculture of alien, weedy annuals; lots of fine fuels ready to carry a fire nearly every year. It becomes a self-perpetuating process."

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Although I knew the question was a sincere one, it was also very troubling. How could such a significant threat to native landscapes not be as well known and understood as other environmental problems?

Poor attention by the press and lack of awareness of the issue by traditional conservation organizations provides part of the answer. But I fear another reason why the threat of type-conversion is grossly underestimated is due to a select group of

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Richard D. Hawkins: A True Chaparralian

"I don't really do letters. I'd rather talk to you directly."

That was the first thing Rich Hawkins, the Fire and Aviation Officer for the Cleveland National Forest, said when he called me on my cell phone while I was attending my son's soccer practice. I had just sent him a letter a few days earlier in March of 2004 expressing concerns about future fire management plans after the 2003 fires in San Diego County. Within a few moments it became quite clear that not only was this man a talented professional, but he knew exactly what he was talking about. It was a refreshing break after listening to an array of misinformed, ill-tempered county politicians, private

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The Western Sierra: the USFS, trees, and fire

Richard W. Halsey

Funny things happen to a chaparral ecologist who spends 5 days backpacking in the Sierra with his two boys, surrounded by trees. He begins to gain a better appreciation for forests and the legacy of the US Forest Service.

Without going into great detail, suffice it to say that much of that appreciation came during conversations with Chris Waters, a good friend we met along the way, who also happens to be a wildfire specialist with the California Department of Forestry and Fire Protection (CDF) and former logger. A few words with visiting pack train operator and respected local mountaineer Tim Shew contributed a few insights as well.

…the sorry state of many of North America's ecosystems is primarily due to uncontrolled resource exploitation in the past, not Smokey Bear.

The basics: **1)** The western Sierra is a complex system of multiple ecosystems and not a monoculture of clogged forests due to misguided fire suppression activities by the USFS. **2)** The current condition of the lower elevation western Sierra from Bakersfield to Lake Tahoe is primarily the legacy of the following activities: unregulated logging from the Gold Rush period *to 1905*, overgrazing *before 1905* (first by sheep, then by cattle), and burning of forested lands by sheepherders and cattlemen *prior to 1905* as they left mountain grazing lands every year during late fall. **3)** In an attempt to end a half century of resource damage by human-caused ignitions, damaging logging practices, and overgrazing, *the USFS was formed in 1905*.

Frankly, the more I learn, the more frustrated I become over the continual criticism of the USFS, the National Park Service, and other agencies concerning past their fire suppression practices. What needs to be communicated to the press, the public, and government leaders is that although fire suppression has allowed fuels to build up in some forests, it was not the cause of the problem. The sorry state of many of North America's ecosystems is primarily due to uncontrolled resource exploitation in the past, not Smokey Bear. If it had not been for President Theodore Roosevelt, government agencies like the USFS, and a legion of conservationists, a lot more of California's wildlands would be seriously compromised today.

So what did the chaparral gang learn about the forest during our High Sierran adventure? We were reminded once again how valuable it is to know the names of everyone at the party. Once we were able to distinguish between red fir, lodgepole pine, and white pine, the place came alive like it never has before. I've been hiking the Sierra for more than 40 years and have always enjoyed the trees, but this time it was different; this time they became friends.

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High Sierran adventures. Kids, trees, horses.

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citizens, and radio talk-show hosts pontificate for months about how they thought the 2003 Cedar fire should have been fought.

My next chance to talk with Hawkins came during a fortuitous seating assignment during a San Diego Fire Recovery Network field trip the following month to investigate the 2003 Cedar fire burn scar. I drove. Rich crammed himself into the SUV's fold-down rear seat. The rest of the passengers listened to us arguing back and forth for the next six hours. We've been great friends ever since.

Richard Hawkins is pure California. His family has called the state home for five generations and he spent his boyhood roaming the backcountry of the Sequoia National Forest outside the town of Porterville. "It was along Highway 190 towards Camp Nelson where I made my first plant collection. When the redbuds are in bloom up there, it's beautiful." While in college he continued to pursue his love for botany by making an extensive collection of the chaparral species found throughout the hills of the central coast.

The one quality that stands Rich apart more than any other is his skill as a leader. "He'll be in a situation where all the other guys are thinking in straight lines and he'll be able to come up with an innovative solution," friend and former colleague Chuck Shamblin said. "He can also get his point across without causing a riot. That's a gift."

With a strong academic background from Cal Poly San Luis Obispo in Natural Resource Management (1975), Rich was a perfect fit for the position of Resource Officer he held in the early 1980's in the Arroyo Seco Ranger District (now the LA River District) of the Angeles National Forest. This strength in resources gave him a valuable perspective on wildfires once he became a fire management officer. To him chaparral is not just fuel, but a valuable natural treasure. When Rich introduces me during meetings we have attended together he often lets people know that, "We're two of the few guys you'll meet who are definite fans of the chaparral."

Rich started his career with the Forest Service in the Sequoia National Forest right above his hometown. "Another ranger and I were responsible for keeping an eye on all the loggers in the area and making sure regulations were being followed." Rumor has it that the assignment was the cause of some wild times, but Rich's ability to communicate likely saved the day (and his partner) more than once.

After leaving Sequoia, he moved to the Shasta-Trinity NF, then the Angeles, and finally the Cleveland. "Much of my work involved management of chaparral species, especially the past 29 years on the Angeles and Cleveland," Rich said during a recent conversation. "My interests in fire dates back to childhood days on the farm. Ending up as a firefighter is not a surprise since one of my childhood babysitters was an LA County Fire Battalion Chief."

Hawkins between fires, trying catch up on those incessant emails at his Cleveland National Forest office in Rancho Bernardo.

Rich's respect for the natural environment shows during fires he helps manage. "When Hawkins is around we all know the bulldozers stay locked up unless there is a real emergency," one firefighter told me.

Rich's loyalty to his friends and colleagues inside and out of the Forest Service is

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legendary. His honesty and integrity can be seen in everything he does. The USFS, and especially the Cleveland National Forest, is a much better place because of Rich Hawkins --- caring for the land as a ranger, a forester, and a firefighter.

A toast with a glass of Cabernet Sauvignon from Pride Mountain Vineyards to you, Richard D. Hawkins…a true chaparralian.

Sierra from pg. 2

As we looked around during our travels we became familiar with what a "sub-alpine" forest really was. Around 8,000 feet and above, the forest was a mixture of the three conifer species previously mentioned with lots of bare rock in between (see photo below). We spied a couple different manzanita species dominating thinner soils and a few dead snags that had been hit by lightning.

On the drive down the mountains into the central valley we noticed ponderosa pines beginning to appear around 7100'. In some places the forest was pretty thick, other places not. At 5000' oaks showed up with scattered chaparral shrubs. By 4000', the ponderosa pines were replaced by oaks. Then at 3500' chaparral dominated, followed by scattered oaks and with a thick understory of alien grasses like wild oats. By 1000', the trees were gone.

"Dad," my son Jake said while staring out the car window, "Let's go back to the mountains."

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individuals who have chosen to dismiss the problem in favor of promoting favored theories and specialized agendas. A helpful way to think of these individuals is as "denialists." It is important to note, however, that denialists are not the same as skeptics. Skepticism is a crucial and healthy part of analyzing theories and ideas. Denialists, on the other hand, confuse the process by either consciously or unconsciously denying verifiable scientific truth because it does not fit into their personal view of the world.

The problem with denialists is that regardless of the quality of their data, they are frequently viewed as equals to others who actually know

Denialists are not the same as skeptics. Skepticism is a crucial part of analyzing ideas.

what they are talking about. Denialists use this to their advantage whenever their favored theory is challenged. The resulting "debate" is seen by the public as simply one of expert vs. expert without any objective analysis of what is being said. The media fosters this approach because it provides personal drama to what the public might otherwise view as boring science.

Classic forums for denialists are government hearings held by federal or state legislative committees. One would think a balanced group of individuals would be called to testify in order to inform those listening. However, the participants of these hearings are often selected by the majority party in order to slant the discussion in one direction or the other.

Why would anyone want to ignore or minimize the threat of type-conversion in native ecosystems due to increased fire frequency? Wildfire and how to deal with it is fraught with politics, economics, and strong opinions. Any issue complicating land

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management decisions under such conditions is hotly debated and prone to denialist rhetoric. The "wildflower/grass controversy" revolving around the Sawtooth Complex fire near Yucca Valley may provide one such example.

It was reported in the July 13, 2006 *Desert Sun* newspaper that a geographer from the University of California said native wildflowers carried the fire's sweep across the desert. In addition, he predicted the area would not burn again for "another century or so, depending on heavy rainfall."

These statements led to a whirlwind of emails and conversations over the following week because those familiar with the area knew that alien weeds, mainly cheatgrass and red brome, had created a dangerous fuel bed throughout the desert. Attributing the fire to native wildflowers was not only contrary to what was known, but it fostered two unfortunate misconceptions; the fire was an unusual event caused by record rainfall and that native plants were once again the responsible agents of a destructive inferno. The geographer's statements were so unbelievable to some that they questioned the accuracy of the quotes. However, both the accuracy and emphasis of the quotes were later confirmed by the reporter and the geographer himself.

After assembling information from multiple on-site visits, interviewing or hearing from numerous individuals who were either on the fire or have an intimate knowledge of the area (including local ecologists, land managers, and firefighters), and studying official post-fire reports from the US Forest Service and the California Department of Forestry, there is no question that the geographer's perceptions and predictions were wrong.

Post-fire inspections of unburned islands within the fire perimeter (caused by fire suppression activity or topological features) revealed the remains of very few native wildflowers. In fact, it was difficult to find any at all in most locations. Instead, the overwhelming fine fuel component was cheatgrass and red brome. Fuel conditions within the burned area prior to the fire were similar based on interviews with local residents and scientists. Native wildflowers were not

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The geographer's statements were so unbelievable to some that they immediately questioned the accuracy of the quotes.

(L): Aerial view of Sawtooth fire looking north. Morongo Valley on lower right with Highway 62 on right. (R): Sawtooth fire near Mockingbird Lane, Morongo Valley. Photos courtesy of The Desert Sun.

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responsible for carrying the flames.

The only way the desert portion of the Sawtooth Complex fire could have carried the way it did was because alien grasses created a continuous fuel bed in many areas, with especially dense concentrations under trees and shrubs. Coupled with high winds and record temperatures, this unnatural fuel bed facilitated the rapid movement of embers and heat, quickly igniting one shrub after another. Although it is extremely difficult to know exactly what the historical fire regime was in such desert regions, the scientific consensus is that desert fires in the past were limited in size because there was not a continuous fuel bed to carry the flames.

The suggestion that the fire was only made possible by heavy rains stimulating abundant native wildflower growth fails to consider the flammable mix of invasive species and how they have altered both fire behavior and frequency (one wonders how the alien grasses responded to all the extra rain!). Desert fires are becoming more common and are increasing in size not because of increased rainfall, but because of increased volumes of weedy annuals (see additional details on this point from Dr. Mark Dimmitt on page 9).

Why would anyone ignore the impact of alien weeds on fire frequency and focus instead on native wildflowers? It's impossible to know for sure, but one plausible reason relates to the denialists' desire to fit everything within the confines of a favored theory and ignore the negative consequences practical applications of the theory may ultimately cause.

The denialists' rejection that type-conversion occurs in systems like chaparral appears to be intimately connected to the erroneous opinion that wildland fire suppression is universally a bad policy.

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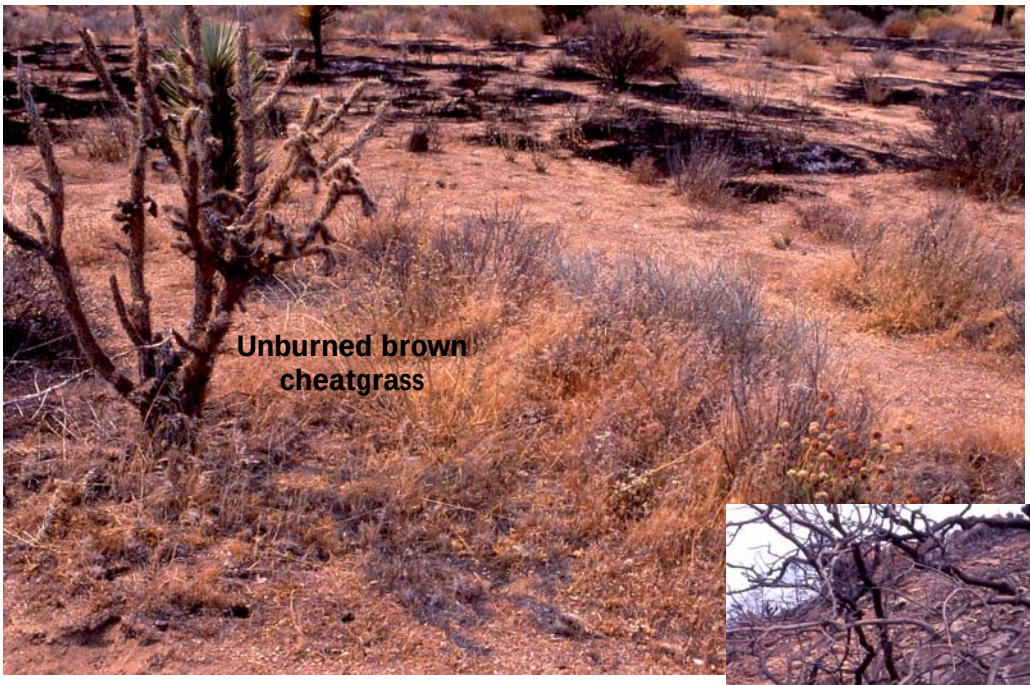

Burned spots showing where cheatgrass and shrubs were comsumed by the flames.

The remains afterwards…

A tiny forest of shrubs with a thick understory of weeds beneath each. Dense carpets of cheatgrass formed under most desert shrubs in the Sawtooth fire area, acting as kindling for embers as the hot firebrands were propelled ahead of the fire front by fierce winds.

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Adherents of this viewpoint insist that fire suppression has led to the unnatural accumulation of fuel which they claim is responsible for large fires. Their solution is to conduct landscape level burning projects to create so-called “mosaics” of different aged vegetation which will supposedly limit fire spread.

However, two issues cause considerable problems for the denialists (which is why they are denied!):

1) Extreme wind conditions coupled with drought have a habit of pushing flames through nearly all types of vegetation. The 2005-06 Texas-Oklahoma grass fires that burned nearly 5 million acres, and the Sawtooth Complex desert fire that roared through Pioneertown were all powered by extremely strong winds and fine, grassy fuels.

2) Fire frequency is increasing throughout Southern California. This is leading to type conversion, especially to desert, sage scrub, and low elevation chaparral plant communities.

These two issues are dismissed by denialists because they either challenge their basic premise of why large fires occur in the first place or reveal damaging environmental consequences of the fire/land management policies they are trying to promote (e.g. severely limiting fire suppression efforts and adding more fire to the landscape via large, prescribed burns). The acceleration of type-conversion of certain native systems, the increased spread of invasive weeds, and the ability of those weeds to carry wildfire must be denied in order to preserve the acceptance of the denialists’ favored theories. By blaming the Sawtooth fire on a rare, natural event (abundant native wildflower growth due to unusual rainfall), the denialists find a convenient way to avoid confronting contrary data.

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On the fire perimeter. The basic fuel type consumed in the Sawtooth fire can be seen below the red fire retardant drop line. Native shrubs are surrounded by large clumps of brown cheatgrass. No significant remains of native wildflowers were found at this site.

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In an interesting paper read before the Society of Western Naturalists in 1889, Thomas C. Chamberlin addressed these issues when he wrote, “There is an unconscious selection and magnifying of the phenomena that fall into harmony with the theory and support it, and an unconscious neglect of those that fail of coincidence. There springs up, also, an unconscious pressing of the theory to make it fit the facts, and a pressing of the facts to make them fit the theory.”

Chamberlin’s ideas are as important today as they were more than 100 years ago.

Pipes Canyon Reserve after the Sawtooth Fire, July 26, 2006. Ancient pinyon-pines on hillside.

A blanket of cheatgrass and red brome covers the ground of a desert hillside along Highway 62, south of Yucca Valley, California. Dense fuel beds composed of alien grasses and weeds such as this are the primary carrier of wildfires throughout the Mojave and Sonoran Deserts.

A Perspective on Invasives from Arizona

By Dr. Mark A. Dimmitt

Editor's Note: The following is one of the contributions sent to me during the discussion over the suggestion that native wildflowers carried the July 2006 Sawtooth Complex fire. Dr. Dimmitt is a renowned botanist and Director of Natural History at the Arizona-Sonoran Desert Museum in Tucson.

I appreciate your detailed reply and attempt to set the record straight. The Desert Museum has been doing this in Arizona, and it has been an uphill battle to educate news media and firefighters to look more closely and stop attributing all fires to "desert grass and brush", which is a bogus term in the natural world.

I have been observing and documenting desert wildflower blooms since the 1960s. Here are a few supporting observations:

1. Most desert annuals in the Mohave and Sonoran Deserts (about 90% of the species are in common) shatter within a few weeks after they die in the spring. They apparently do not carry fire well when still standing, and certainly not once they have disintegrated and the fuel lies on the ground. Exotics like red brome, buffelgrass, Mediterranean grass, and Sahara mustard remain standing for a year or more after maturation. I read the comment about the incredible density of Amsinckia; this is one of the few natives that might carry a large fire. But the geographer from UC is dead wrong in predicting that such fires are rare. The burned areas will be overrun with invasive exotics and in jeopardy of burning in every wet year. Several such fires will extirpate nearly all native desert plants.

2. During my 40 years of wildflower chasing, I never saw or heard of a large desert fire below 3000 feet elevation until the 1990s when Sahara mustard and buffelgrass joined Mediterranean grass to create volatile fuel loads. These low desert fires have been increasingly numerous in the past decade. Red brome and cheatgrass have been supporting fires in higher desert since at least the 1970s, but these too seem to be increasing in frequency and size. There are historical records that the east Mohave was quite grassy before cattle and sheep changed the landscape, but as you say, fires are difficult to document. But the existence of extensive groves of Joshua trees and other slow-growing, fire-intolerant species indicate that fires must have been rare.

Buffelgrass and other alien grasses invading a Sonoran Desert landscape in Arizona after a fire (left). Right side of photo shows the natural system. Note saguaro cacti. Photo: J.E. Keeley

3. Always be suspicious when someone cites "record rainfall" or "best wildflower bloom in a century". I have heard the latter superlative applied to Anza-Borrego, Death Valley, and Joshua Tree at least four times EACH in my 60 years. People have short memories. 2005 was only slightly above average rainfall in AZ, but it was biologically very wet because of the regular spacing of storms. It is intuitive that a 6" rainfall year all in October will have much less impact on vegetation than 6 1-inch storms spread out over the fall-winter season.

Pioneertown: A conversation with Jim Hart

By Tommy O'Malley

I caught up with Jim last week outside his desert hide-away after his return from fighting fires for 6 days. His place survived a fire on his own property, but the surrounding landscape was charred black. He still had a lot of soot under his finger nails.

"I hate newspapers," he started, "but I read some lying around the Irish pub I visit once and awhile. I read this bit about some woman and her husband who have lived on a ranch out near Anza and supposedly have seen their share of fires. I have it here somewhere."

Jim found and picked up the paper from a disorganized pile of other publications, files, and books assembled on a wooden table in the corner of his screened-in porch.

Madelyn's place, burned in the Sawtooth. Madelyn, a veteran of the early movie days in Pioneertown, was a close female associate of Gene Autry's and who took care of his trick ponies as well as standing in for him from time to time (a fact few are aware).

"Listen to this…'My husband spends about three months clearing the property of dry brush just in case, particularly, sagebrush, which is a common feature of the landscape,' she said. 'It burns like gasoline,' her bearded husband chimed in. 'I've seen that stuff just explode from the heat.'

"Blind! They're all blind," Jim blurted out. "It has nothin' to do with the sagebrush. It's the damn alien weeds. First it was the sheep, then the cattle, then the idiots flicking cigarettes into the grass along the roadside. They're spreadin' fires everywhere! Unless people understand it's these weeds that are makin' big fires possible, the desert as we know it will disappear."

Hart stopped to take a long drag off his cigar, turned and spit, then pointed to out into a blackened area about 100 feet away in his front yard (or what was left of it). "See that burned tortoise shell over there? He never had a chance. They can't outrun a grass fire, you know. Real natural. Yup."

"Jim, did you hear about that geographer who was quoted as saying native wildflowers were responsible for the Sawtooth fire near Pioneertown a couple weeks ago?"

"Native wildflowers my ass! Yeah, I heard. You know the problem with what that guy said is that it supports the idiotic notions that big desert fires are natural and that native plants are the responsible party, meaning the best way to stop wildfires is by grinding up the landscape. With development movin' in on wildlands in every state, more and more native habitat is bein' compromised. If the public thinks the native stuff is the main wildfire issue, then irrational, fear-driven vegetation clearance activities will run rampant,

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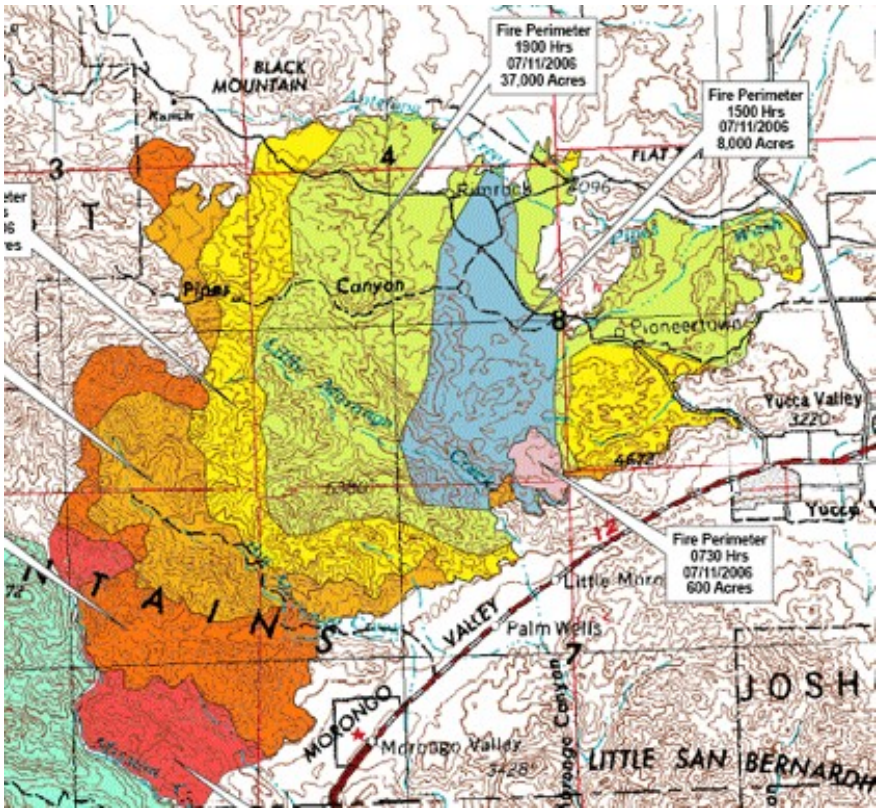
eliminating what nature is left after the golf courses go in…which by the way the idiots usually put inside the community instead of using it as a fire buffer on the outside.

"Here's one for you. My buddy Dennis runs a grading operation. He says these new property owners come out here in the desert and want him to clear their five acres so they can put up a house. He explains to them that those little clumps of sage, blackbrush, and juniper are like little ancient forests. Some of the blackbrush bushes could be a couple hundred years old and they're only two feet tall for God's sake! They're part of the landscape and won't come back if some fool takes a blade to them all.

"Well, Dennis tells these people he won't do what they want and ends up losing the job. I just hope to hell they learned something from him and didn't go out and find someone else to do it."

Jim tossed the newspaper back on the table and black dust puffed into the air. "Ashes from the fire," he said. "Tells you something about how easy it is for embers to get inside."

I wrote down a few things, then changed the subject to Pioneertown. It was the small desert community that was hit pretty hard by the Sawtooth fire. "Pioneertown, Jim. Do you know what happened out there?"



Fire Progression map of the Sawtooth Complex fire. Pioneertown marked in green area in the upper right. Fire was started by a lightning strike in the pink area on July 9, approximately 5:30 AM.

"The lightning hit about 0530 Sunday morning," he quickly answered. "It ignited a small fire and crews were right on it. Things seemed to be under control so the guys weren't too worried. What they were concerned about was it movin' out toward Morongo Valley to the southeast. So by early Tuesday they had moved most of their firefighting resources out that way.

"Well, as nature would have it, things changed. And they changed very quickly. About 1030 Tuesday strong winds kicked up from the southwest. My friend Danny saw the flames cresting the ridge right above Pipes Canyon Reserve

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about 1400. He was at the Conservancy's buildings there. He turned to collect a few more things to evacuate and within less than a minute shrubs all around him were on fire. He raced down the road and saw the flames right behind him; they were screamin' on account of the wind. By 1500 the fire slammed into Pioneertown. There were only a couple engines there, so the place never had a chance. As the fire reached the main valley, it slowed down a bit giving Danny a chance to get his home ready when the fire front arrived. Thanks to some quick work by a crew of Hotshots, the sprinkler system on his roof, and Danny's presence on the property, the house was saved. A lot of other places weren't as lucky. All together, 58 homes burned."

I was trying to translate Jim's time references to regular clock time, but figured I could do it later. "I heard there was a fatality out there. Something about…"

"Jerry Guthrie and his dog," he interrupted. "He had been told to evacuate, but stayed. There's speculation he left his home and walked up a small ridge to check on the fire's progress Tuesday shortly after talking to his son on the phone around 1130. Maybe he panicked. Maybe his dog panicked and he chased after him. Whatever happened, Jerry got caught by the flames just like the rest of the desert. Ironic thing is that his house survived. It's a well built, domed shaped thing with fire resistant materials covering the surfaces. He had done an excellent job creating a fire safe home. The desert all around his place was toasted. Desert shrubs were pretty close. Looks like the building's design more than anything else saved the place. If he had only stayed inside…

"The folks in Pioneertown are good people," Jim said quietly. "A lot of them were connected to the land. This shouldn't have happened to them."

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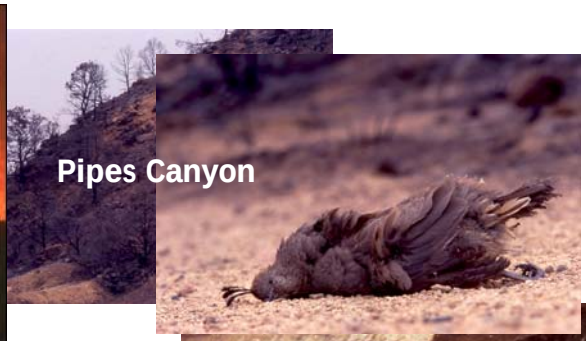
Flame front approaching Pioneertown

Photo: Desert Sun


Pipes Canyon


Desert woodrat without a home…but a survivor


Pioneertown

Photo: Desert Sun


Pipes Canyon

Hart cont. from pg. 12

After a long pause, Jim motioned toward the door of his little desert shed. “Let’s go inside.” We went in and he grabbed a couple beers from the refrigerator, handing me one. “Have a seat. Why in the hell this place didn’t burn down I don’t have a clue. Ember traps all over.”

Jim popped off the cap on his bottle with the ring on his right hand then looked at me. I was lamely standing there holding my bottle, unopened. “Give it to me,” he demanded, quickly opening it and handing it back. “Still a kid, aren’t you O’Malley?”

We had a few sips and listened to a canyon wren off in the distance. “I’m surprised he survived the fire,” I said.

“Yup.”

“So Jim, is there any solution to this weed thing?”

“I don’t have a clue. But I do know it doesn’t help to have people like Dr. Wildflowers-burn-the-desert spouting off to the press as if they know what they are talking about. The impact of invasive weeds on native plant communities has been a nightmare.

“Bet you’d be surprised the USDA is spending your tax dollars to genetically strengthen buffelgrass and supplin’ it to Mexican ranchers for forage. Buffelgrass is Arizona’s cheatgrass. It’s weaving into Sonoran Desert landscapes like an octopus. So the government is makin’ it stronger for commerce south of the border. I suppose one illegal alien issue isn’t enough for them.”

I remembered seeing a lot of brown hillsides on my drive out to Jim’s on Interstate 10. I wondered outloud if type-conversion was going on there too.

“Damn straight. Sage scrub, chaparral. All turning to weeds, especially at lower elevations. If you want to have a firsthand view of what has happened, take a drive westbound on Highway 60 through the badlands area between Beaumont and Moreno Valley. Pull off when you can, get out of your car, and take a short stroll down into the waist-high

Type-conversion in the “badlands” along Highway 60. This area was originally covered by native sage scrub and chaparral plant communities. No more. Green clumps are remaining sugarbush shrubs.

growth of mustard, Bromus, and wild oats. The occasional smell of dumped garbage, flicking grasshoppers hitting your face, and sharp weed stickers penetrating your skin will help you get in touch with what “type-conversion” by alien plants is all about. And yeah, those grasshoppers are likely the only wildlife you’ll be able to see. Sure, there are a couple sugarbush shrubs trying to make a comeback from the last fire, and here and there you might find some struggling sagebrush, but for the most part the place is a 21st century wasteland. Kinda makes you feel the same way as you might if your hometown had been turned into a garbage dump or the house you were raised becomes the local crack house.

“A buddy of mine who’s a fuels manager with the USFS told me the other day that it’s like a slowly creeping “band of yellow felt” moving up the front range of the San Bernardino, Santa Ana, and San Gabriel Mountains as chaparral is being type-converted to weedy grassland. Fire after fire has replaced the native stuff with flashy, annual fuels. Same kind of thing is happening along Highway 62 on the way to Yucca Valley. It’s not so much a yellow band there, but more of a blanket. That blanket is what we call a continuous fuel bed. It will carry fire long distances. Historically, fires likely traveled only a few yards before going out

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The creeping "band of yellow felt" along the front country of the San Bernardino Mountains. This phrase describing the steady type-conversion of native plant communities was coined by Randy Striplin, USFS. Caused by increased fire frequency, this amber wave of grass is slowly consuming California's valuable natural resources.

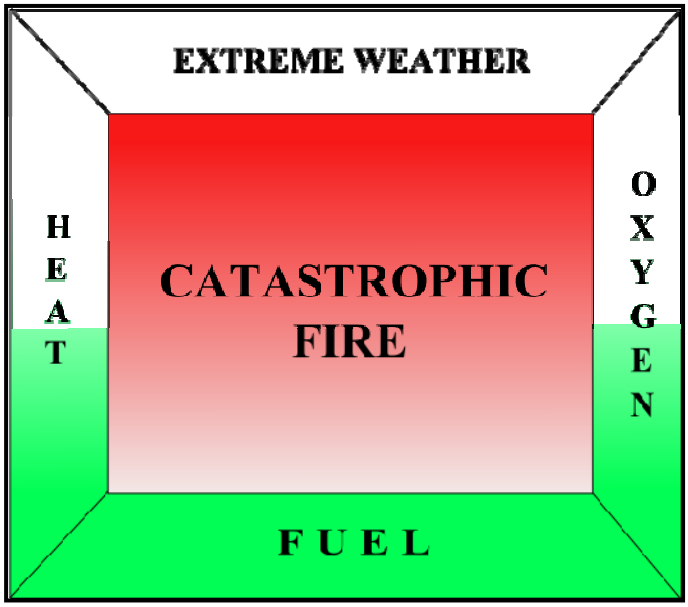
on their own. Combine the invasive fuel bed with low humidity and high winds, the factors that happened when lightning started the Sawtooth fire, and you have a recipe for disaster.

"You want a real solution? It's gotta start with education, awareness. Fire's a big issue and that's a good place to start. Lots of money there. I say attach a nature center right on every new fire station built near a wildland area. Make resource protection as important as structural protection. In fact, if they plan communities right, they won't have to worry about protecting them. They'll protect themselves. They're building a new station below the Tecate cypress grove that burned last January in Orange County. Build a nature center there. Treat the cypress grove like a suburb. Do some fuel modification to protect it. Punch a trail up there from the fire station/nature center so people learn to appreciate it.

"I suppose ignorance is bliss, but it sure as hell isn't the path to salvation for native plant communities. You know we lost 1,000 year-old pinyon pines up Pipes Canyon after the Sawtooth fire? Within the next 100 years, Central Park West, otherwise known as the San Bernardino and Angeles National Forests, will be joined by other wildlands to become highly degraded systems with lower species diversity and higher densities of disposable diapers.

"That's not the kind of legacy I want to leave behind. You? Healthy wild open space is a quality of life thing. Whether or not people understand it doesn't mean we don't need to make sure it exists for them. And their kids. Maybe once people see what's going on, they'll be behind efforts to protect what's left. But it will require them to drop their egos and make compromises.

"You gotta have hope, O'Malley. It's the only way you can still enjoy the desert here. Or anywhere."



THE FIRE SQUARE:
Introducing a new fire model

The traditional fire triangle may be helpful in understanding campfires, but it fails to address a key issue firefighters must face during the most destructive wildfires --- extreme weather conditions (low humidity, high temperatures, and high winds). During such times, flying embers become particularly potent as they can travel up to a mile ahead of the fire front reducing the effectiveness of clearance zones around homes. This is why it is so important to focus on making the structure itself fire resistant.

The Fire Square. Fuel (green) is the basic requirement for a fire to exist, coupled with the necessary heat and oxygen. However, as weather condition variables become more extreme, fuel type becomes less important and fires turn increasingly catastrophic (red).

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