



The *Changing* Face *of* Fire

If we're going to stand a chance against megafires, we must make changes *By Tom Boatner*

I was a green 19-year-old when I started fighting fire on a helitack crew in 1976 in the Fortymile country of Alaska's eastern Interior. Sitting around campfires in the Alaska bush when our work was done, the older guys from my crew and other crews we worked with used to talk about the biggest, baddest fire any of them had ever worked on or heard about. It was called the Sundance Fire, and it burned the Idaho Panhandle during the summer of 1967.

Flash forward 25 fire seasons to that of

2000, and shift locations from remote Alaska fire camps to the Aerial Fire Depot in Missoula, Mont. I was no longer the greenest kid firefighter in Alaska; I was the Bureau of Land Management's (BLM) State Fire Management Officer for Montana and the Dakotas, as well as the BLM representative to the Northern Rockies Multi-Agency Coordinating Group (NRMAC).

At that time, the NRMAC had assembled in Missoula to set priorities and make decisions about resource allocations for a huge and

unprecedented fire season. More than a million acres were burning in Montana and north Idaho. Four area commands (ACs) were deployed along with more than 20 Type I and II incident management teams; more than 20,000 firefighters and 200 aircraft were at work in the Northern Rockies alone. Thousands of people had evacuated their homes, and numerous communities were imminently threatened.

Other geographic areas in the West were also experiencing big fire seasons, making competition for firefighting resources intense.



The NRMAC held some of its daily conference calls with ACs and incident commanders (ICs) in a small library in the NR Training Center, which contained a lot of interesting historical documents. Imagine my surprise when one day I discovered a map labeled “The Northern Region Fire Emergency of 1967,” which identified the locations and sizes of the fires that comprised this famous fire bust, and heading the list was the monster fire of my youth—the Sundance Fire. I was even more shocked to see that it was only a 55,910-acre fire and that the other fires that comprised this “fire emergency” ranged in size from 124 to 16,600 acres. Total acreage burned by all the fires in the bust: a meager 98,837.

I remember looking at that map, comparing

it to what we were dealing with during the summer of 2000, and thinking, “Man, we wouldn’t even break a sweat for the ‘Fire Emergency of 1967’ if it occurred today.” And yet a mere 33 years earlier, it had been considered a major fire bust, and the Sundance Fire had been considered the monster fire of the decade.

I don’t mean to make light of the Sundance Fire or the firefighters of that era. The Sundance Fire was a serious, hot fire. It burned 50,000 of its total acres in one amazing 9-hour run that killed two firefighters. The fireline leaders and firefighters of that time were physically fit, tough, skilled woodsmen who worked with little or no air support and completely without the high-quality communications, meteorology and predictive services support we enjoy today. What I do mean to say, and discuss throughout this article, is that our world has changed. As a result of this change, wildfire is no longer an occurrence that takes place for a relatively short amount of time out in the woods; it has mutated into a major event that lasts at times for weeks on end, taking lives and property, thoroughly exhausting all resources and leaving large swaths of burned acres and homes in its wake.

Mega Stats

Thirty years ago, if anyone had accurately predicted the fire seasons of today, they would’ve been laughed out of fire camp. We’ve all heard the statistics—after a while they become overwhelming. The National Interagency Fire Center (NIFC) in Boise maintains a wealth of statistics on acres burned per fire season dating back to 1960. Of the 10 largest fire seasons since 1960, using total acres burned as a relative measure of fire season scale, nine have occurred since 1999. The four busiest seasons, using total acres burned as the measure, are the last four, the two busiest being the last two.

Many states have registered historic fire seasons in the last decade, as well as the largest fire or fires in a century or more of post-settlement history—the so-called “megafires.” The record-breaking states range from Georgia and Florida to Alaska and include California, Texas, Oklahoma, New Mexico, Arizona, Oregon, Colorado, Montana, Idaho, Nevada, Washington and Utah.

The string of fires that make Sundance look puny include the Hayman, Missionary Ridge, Rodeo-Chediski, Cedar, Biscuit, Boundary, Murphy, Zaca, Day, Valley, (insert the name of your favorite megafire here). None of these megafires’ public notoriety lasts very long, like Sundance’s did, because they are

soon replaced by the next multi-hundred-thousand-acre, multi-million-dollar gobbler. I visited an AC in central Idaho last summer, and on the daily conference call, the ICs talked about their three fires—all of which had burned more than 200,000 acres and threatened homes and communities—like it was just another day at the office.

Routinely in recent fire seasons, demand for resources has far outstripped availability and overall fire suppression costs measure in the billions. So in the short span of just a few decades, the length of one fire career, the world we as firefighters operate in has changed dramatically.

The Three Horsemen

What’s driving this remarkable, large-scale change and what do we need to do about it? I think the major factors have been widely discussed and are, for the most part, widely agreed upon by wildland fire professionals. I call them the three horsemen: climate change, fuels build-up and homes. *Note:* In my view, a fire manager’s perspective, it’s not important to get into a huge debate about what’s causing or driving climate change, and whether it’s a temporary aberration or a long-term change. Some facts are beyond debate: Our fire seasons are longer, hotter and dryer, and there’s no apparent end in sight, so we better be prepared to deal with them.

Successful fire exclusion has led to gradual, widespread fuels build-up on public lands, which, along with climate change, drives the intense, large-scale fire seasons we see today and their consistent stream of megafires. The continued explosion of home building in fire-prone environments and the consequent demand to protect those homes add a complexity and expense that was essentially unknown in the not-too-distant past.

What We’re Doing Right

The interagency wildland fire programs across the country have become highly integrated and professional in recent years, as we’ve built one national fire response program, rather than innumerable independent federal, state and local fire organizations. This has led to consistently high initial-attack success rates in every part of the country, despite the thundering of the three horsemen across the fire landscape.

With the development, widespread acceptance and evolution of the incident command system, an agreed-upon set of national training and qualification standards, and a national coordination and mobilization system, we’ve



APPHOTO/MATTYORK

Members of the Sierra Hotshot Crew of Oakhurst, Calif., maintain the fireline during a backburn near Cibucue, Ariz., on the Rodeo-Chediski Fire, which charred more than 460,000 acres.

become adept at acquiring and moving massive numbers of fire resources to any location in the country to deal with fire activity that grows beyond a local area's capability.

Outside of the military, no other organization or agency in America can organize and move the numbers and types of people and gear that fire agencies move on a regular basis. With rapidly expanding prescribed fire and fuels treatment programs, we're also attempting to reduce fuels build-up, put fire back where it belongs and improve protection of threatened communities and homes.

What Needs to Change

Despite the major strides we've taken in recent years to fight larger fires, there are problems and weaknesses we must continuously address.

The System

Because our current system of integrated national fire resource availability and movement has been highly successful, and because we've long been successful at making aggressive initial attacks, we're comfortable continuing to do some things the same way we did them yesterday. It works, and we're good at it.

The huge integrated national fire program we've built is predicated on our willingness to help our neighbor firefighters in their time of need, believing that they will return the favor in our time of need.

It's a beautiful system to watch in operation; however, it's based on the assumption that the overall supply of fire resources will exceed the overall demand for those resources most of the time. This is no longer true. These days, demand routinely exceeds supply for long periods of time because of three major factors:

- The scale/duration of today's fire seasons;
- The stress on fire budgets at all levels, which leads to reduced numbers of firefighters and key equipment; and
- The demands to continue expanding fuels reduction and prescribed fire work and to respond to other types of non-fire incidents.

This leads to scarce, high-quality resources working on lower-priority fires in one place rather than rapidly moving those resources to critical fires in other places. Our intelligence system becomes a means to exaggerate threats and needs, and hide and hoard scarce resources.

Multi-Agency Issues

Our multi-agency coordination groups and systems, although improved in recent years, have still not developed into organizations and processes with clear command-and-control authority. As a result, across the country and across jurisdictional lines we lack clear and consistent methods for accurately and objectively making decisions, and determining relative priorities and values at risk.

Resources

Too often, air assets, hotshot crews and other critical resources work on the backside of a low-priority fire instead of rapidly redeploying to a more critical location. If we're going to successfully deal with today's fire seasons, where resource demand will routinely outstrip firefighting capability, we must collectively identify where and when we must fight fire aggressively no matter what, and where and when we can scale back our efforts and still reduce fuels, restore needed fire in ecosystems, move resources to higher-priority fires or simply cut costs.

There isn't a riskier or more courageous decision for a line officer or fire manager to



PHOTO: JEFF ZIMMERMAN

In July 2007, the Zaca Fire burned more than 240,00 acres, making it California's second-largest fire in history after the Cedar Fire of 2003.

make than the decision to offer up and release resources during a time of fire threat to someone who needs them more. Our agencies must support and praise those kinds of high-risk, brave decisions and the leaders who make them. We must also continue to strengthen our processes, chains of command, and

command-and-control authorities that allow these decisions to be made intelligently, objectively and quickly.

Commanders who decide to staff large fires for the long term and order large numbers of fire resources must first consider the level of fire activity regionally and nationally, as well

THE PERFECT FIRESTORM

Climate change, fuels build-up & land use among causes of rising megafire trend By Thomas Swetnam

The Earth is warming up and some regions, such as the western United States, are drying out. One of the predicted, and now observed, ecological consequences of these climate changes: larger and more severe wildfires.

Thousands of scientists worldwide have been intensively studying the patterns, causes and impacts of recent climate changes. The bulk of scientific evidence supports the conclusions that the climate is warming, and greenhouse gas emissions from burning fossil fuels and forest clearing are largely responsible. Moreover, it's evident from documentary records and paleoecology data that wildfires are highly responsive to recent and past warming and drying patterns. It's quite likely that future climate changes due to rising greenhouse gases will lead to an increase in the size and severity of wildfires in many regions.

The scientific literature on climate change and wildfires is developing rapidly with increasing evidence of the trends and their impacts. My colleagues and I, for example, published a paper in August 2006 (Westerling et al., *Science*, vol. 313, p. 940–943) that clearly shows a rising trend in the number of large forest fires in the 11 contiguous western states, as well as strong correlations with rising temperatures. We found that almost seven times more land area burned between 1987 and 2003 than between 1970 and 1986.

Large forest fires are occurring earlier in the season, especially during early snowmelt years, which have also increased in frequency in the past two decades. Many of these large fires have occurred in higher elevations of northern states in areas dominated by wetter, cooler forests that rarely burned in the past. These areas have also been less affected by fire suppression than lower-elevation, drier forests that previously burned frequently during surface fires. Studies in Canada and Alaska show similar trends of increasing area burned related to warming temperatures. Although reliable, long-term Russian fire statistics have been difficult to obtain, warming is also abundantly evident across Siberia. Gigantic fires have occurred in recent years in this vast region, dwarfing those observed in North America.

In addition to climate change, other factors are contributing to wildfire problems, with varying importance from place to place. For example, there have been changes in some ecosystems as a consequence of fire suppression and land uses over the past century. Increasing stand densities, fuel amounts and continuity are major contributing factors to recent wildfire extent and severity in some areas. Invasive grasses and other species have also greatly modified fire regimes. Urbanization of fire prone landscapes is

a primary problem in other areas. Unfortunately, these many different contributing factors often interact and combine in different ways with climate change to increase the impact on ecosystems and people. This is the "perfect firestorm" of the present and future.

Solutions to wildfire problems will depend upon tailoring policy and management responses to local circumstances, while also moving rapidly toward national and global reduction of greenhouse gas emissions.

A position statement on climate change and its implications for fire management by the Association of Fire Ecology (AFE) can be viewed at www.fireecology.net/pdfs/san_diego_declaration_final_29_nov_2006.pdf.

The AFE is a professional organization composed of fire ecologists and fire managers from the United States and other countries.

Tom Swetnam was raised in rural northern New Mexico where his father was a Forest Service district ranger. He worked seasonally as a helitack firefighter in the Gila Wilderness during the late 1970s. He has been a professor at the University of Arizona since 1987, using tree rings to study forest fire history and climate in the western United States, Mexico, Argentina and Siberia.

as the current and future availability of fire-fighting resources, because obtaining staff and resources for the long term is no easy task. There are very complex jurisdictional, legal and political issues, as well as the priority-setting and decision-making national interagency wildland fire model that cuts across agency and jurisdictional lines, that will always limit total resource mobility. Improving our interagency command-and-control priority-setting and decision-making models at local, state and national levels will directly affect how well we adapt to future megafires and megafire seasons.

Training

Another area that needs improvement: our method of training and qualifying firefighters and fire support personnel as they gain experience. We call it a performance-based system, but we've allowed it to become a time-based system. In general, we require Ulysses S. Grant and Beetle Bailey to put in the same amount of time to become qualified and advance as fireline leaders. Instead of recognizing that General Grant far exceeds Private Bailey in sheer talent and capability, we make them both struggle along equally with task books and trainee assignments.

The average age of students in recent sessions of S-520: Advanced Incident Management, continues to hover around 50. This is bad business and bad people management. When firefighters' lives and people's homes are at stake, we must identify the most talented and capable fireline leaders and fire support leaders, and move them forward and upward more quickly. Wildland firefighters who began careers in the last 10–20 years have seen more fire—and more intense fire—than anyone who's ever fought fire in America before them. The best and the brightest of this generation shouldn't be arbitrarily held back from key



AP PHOTO/ED ANDRESKI

A firefighting helicopter races to fill its bucket as the Missionary Ridge Fire rages out of control north of Durango, Colo., on June 20, 2002.

leadership positions simply because their boss advanced at a slower pace.

Public Information

Lastly, we must aggressively look for opportunities to educate and use the media to help us describe to the public the fire environment in which we work. When elected officials or homeowners complain or criticize our decisions and/or our performance, our professional, courteous response must be that we won't risk firefighters' lives in places where wildland/urban interface (WUI) standards haven't been established and enforced, and where homeowners have done little or nothing to help firefighters protect their homes without dying in the attempt. Elected officials and homeowners in the WUI must partner with wildland fire agencies and accept their fair share of the responsibility for the work that must be done and the risk that must be faced.

Conclusion

When you consider the fire seasons of the last decade, it's remarkable how well we've dealt with their intensity and scale. We've perfected many tactics over the years for fighting dynamic, dangerous, large-scale fires. Our safety record is impeccable, and we remain focused on making it better. But we can't rest

on past success, and we can't continue to do it today like we did it yesterday. Leaders constantly assess and reassess performance at every level and look for weaknesses that can be improved. Leaders challenge the traditional way of doing business and ask not only why things are the way they are, but if there's a better way of doing them. The new world of megafires and megafire seasons will require us to develop new strategies and tactics for dealing with them.

For 31 years, Tom Boatner worked on helitack and engine crews as a smokejumper aviation manager, fire management officer and finally as the Bureau of Land Management's (BLM) Chief of Fire Operations at the National Interagency Fire Center. In his last assignment, Boatner represented the BLM on the National Multi-Agency Coordinating Group and for the past 2 years served as the group's chair. [Tom: When did you retire? Oct. 2007?]