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International Association of Wildland Fire

IAWF: It's Time to Make Wildland Policies Work

A Penton Media Publication

SEPTEMBER/OCTOBER 2012

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On the Cover

Fires burned through the night on the Springs Fire in the Boise National Forest, Idaho, which threatened timber resources and homes before it was controlled at 6,150 acres. As we face larger and more destructive fires, fire professionals can engage the public (and their leaders) in the wildfire issues that concern us. See page 14. Photo: Kari Greer/U.S. Forest Service

It's Time to Make Wildland Policies Work



Dan Bailey

There is a threatening, escalating wildland fire crisis around the globe. As I write this, Australians continue to examine Black Saturday and other recent, catastrophic fires while preparing for a potentially trying season. In Europe, deadly fires continue to destroy homes, businesses and wildlands. Canadians are busy with wildland fires from New Brunswick to British Columbia. In the United States, fires in Florida, Colorado, Idaho, New Mexico, Montana, Wyoming and California have been devastating and deadly. When you consider that more than 70,000 communities (with 46 million homes where 120 million people live, work and recreate) are located in areas at high risk of wildland fire, it is easy to understand how this is an expanding crisis. It is time for firefighters, politicians, agency leaders, business owners and residents to forge a new paradigm for the 21st century.

Natural resource agencies and wildland fire management professionals are struggling and can't seem to get ahead of this crisis. To many, it seems that wildfires, as fire historian Stephen Pyne has said, have become the "default setting." In other words, if no other action is taken to solve this growing crisis, the default action will continue to result in larger, more deadly and more costly wildfires.

Agencies charged with management of these wildfires set admirable goals, telling us their plan is... "To safely and effectively extinguish fire when needed; use fire where allowable; manage our natural resources; and, as a nation, live with wildland fire." Sounds good, but what does it mean?

The statistics are more telling. Billions of taxpayer dollars have been spent over the past several years on mitigation, education and training. So, why aren't we seeing less wildland fire or a substantial reduction in civilian and firefighter fatalities, or a reduction in the number of homes being destroyed or a decrease in firefighting costs?

Unquestionably, the problem is complex, yet we know what to do. We have the knowledge to keep houses, businesses and infrastructure from burning. We have the tools that enable local communities to develop effective wildfire protection plans, and we know how to work with our local elected officials to implement proper building, fire and WUI codes.

We also know, as homeowners, that we must take individual responsibility for making the decision to build and live in these areas. Yet most people living in these high-risk areas have little understanding of the true impacts of fire, biological or economic, except for the box scores of loss of lives and damage to homes and communities.

Many are wondering if the time has come for an overhaul and streamlining of efforts dealing with this crisis. Unfortunately, the initiatives can, without malice, work at cross-purposes and slow the overall system down, delaying contributions and problem-solving.

This current debate clearly articulates that it is time for a thorough examination of U.S. wildland fire programs, including the costs and duplication of efforts between agencies and leadership. It's time to make wildland policies work; it is time for a complete top-to-bottom review of our federal programs by an independent body, not the agencies.

There is a need for a strong, unified leadership to forge knowledge, experience, technology and research into a system that meets current conditions. If the American taxpayer is to ever get a break on the continually escalating costs of wildfire suppression, it must become a priority to have a more clearly reflected and realistic national review of programs with a sound strategy that starts to see real improvements. Congress and the Administration have to provide the leadership to step up to the plate and fix what is broken.

Dan W. Bailey



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September/October 2012 | WILDFIRE 5

Student Receives Complimentary IAWF Membership



At-a-Glance

Wildland Fire Canada Conference 2012
October 2–4, 2012
Kananaskis, Alberta
www.wildlandfirecanada.ca

12th International Wildland Fire Safety Summit
October 25–26, 2012
Sydney, Australia
www.iawfonline.org

Fourth International Symposium on Fire Economics, Planning and Policy
November 5–11, 2012
Mexico City, Mexico
www.fumeproject.eu

Fourth Fire Behavior and Fuels Management Conference
February 18–22, 2013
Raleigh, North Carolina
July 1–4, 2013
St. Petersburg, Russia
www.iawfonline.org

For a complete list of events, visit www.iawfonline.org/conferences.

In March 2012, **Nicholas D. Yturri** was awarded an International Association of Wildland Fire (IAWF) individual membership at the S590 Course – Advanced Wildland Fire Behavior Interpretation. Yturri was born and raised in the small eastern Oregon town of Ontario. He attended Gonzaga University, then began his fire career with the Bureau of Land Management (BLM) in 1995. The majority of his career has focused on fire operations including engines, helitack, dispatch and fuels. He started in the fire behavior world about four years ago and has been working as a fire behavior analyst with the Type 2 Great Basin Incident Management Team. Currently, he is fire mitigation specialist with the BLM in Boise, Idaho.

The Association will be awarding a number of individual IAWF memberships to Wildland Fire students who graduate from select national courses. A one-year Individual Membership is awarded to the student who best displays the spirit of the class. The membership will provide Yturri with access to the *International Journal of Wildland Fire*, discounts on conference registration, invitations to educational webinars and a subscription to *Wildfire* magazine. This outreach effort is part of the Association's ongoing commitment to maintaining a membership that reflects all aspects of wildland fire management. By investing in today's graduates, the IAWF is better positioned to communicate with the entire wildland fire community and provide global links for people with shared interests in wildland fire and comprehensive fire management.



Left to right: Lisa Elenz, course co-coordinator; Nick Yturri, professionalism award winner; Ron Steffens, IAWF Board member (and S-590 student); and Louisa Evers, course co-coordinator.

If you would like to nominate a senior national course to be eligible for the IAWF Membership Committee's Individual Membership award, please forward your suggestions to IAWF Executive Director Mikel Robinson at execdir@iawfonline.org.

IAWF AWARDS 2012 SCHOLARSHIPS FOR WILDLAND FIRE STUDIES



Two accomplished, experienced students are the latest recipients of scholarships from the International Association of Wildland Fire (IAWF). **Dianne Hall**, a California graduate student, and **Rachel Carter**, a Ph.D. candidate in Victoria, Australia, are the 2012 recipients.



"We see these scholarships as a cornerstone of our Association.

They help to join together our members and our rising experts in the field to better understand and address current wildfire issues and to learn from each other," says IAWF President Dan W. Bailey. "I congratulate them and look forward to their future contributions to our broader knowledge of wildland fire."

Dianne Hall is a master's student in the Department of Meteorology and Climate Science at San Jose State University, California. Her current area of research is to measure and document the interaction between fire and the atmosphere in complex terrain through a series of head fire experiments on slopes. The data set created from the fires will be used by scientists to help understand fire behavior at a micro-meteorological scale and thus lead to improvement of fire behavior predictive models. Hall has worked multiple seasons as a firefighter in California and has been a volunteer firefighter in her community for more than 12 years. She was drawn into this research by her fascination with fire behavior while studying to be a fire behavior analyst (FBAN) for large incidents.

Rachel Anne Carter is a Ph.D. candidate and legal scholar with La Trobe University,

Bundoora, Victoria, Australia. As part of her doctoral program, Carter holds an industry scholarship with the Bushfire Cooperative Research Centre in Melbourne, Australia. Her work centers on insurance and fire-related events. Her research involves an international comparative approach whereby she is currently undertaking an analysis of different systems in Europe, North America, Asia and the Australia-Pacific region. In order to undertake this aspect of her research, Carter spent time as a visiting scholar at the International Institute of Sociology and the Law in Onati, Spain, and in the research offices at the Organization for Economic Co-operation and Development (OECD), Paris. At the OECD, Carter served as liaison with policy makers, economists and senior officials discussing the different insurance models.

Carter has co-authored a book, published in academic journals and presented at international conferences. In 2011, she presented evidence to the Australian Senate in relation to insurance in Australia following the Queensland flooding. She was also involved in insurance media work in the aftermath of the flooding, which resulted in political attention being drawn to the issue; subsequently, the issue was cited by various senators. She has also worked with the Australian

PHOTO CONTEST

Fire is heat and light – and each season, on prescribed burns and wildfires, post-burn and pre-burn, we capture the amazing light of fires in our photographs of fire behavior, firefighters at work and the landscapes we manage with fire.

As the northern fire season begins to wind down and the southern season ramps up, take a look at your photos and send us your best.

Deadline is January 1, 2013. Winning photographs will be featured in print and online versions of *Wildfire*, and the grand prize winner will be auctioned off as a fundraiser at IAWFs 4th Fire and Fuels Conference in February 2013.

We'll announce the judges, submission and review process, and complete details in the November/December 2012 issue. Or, go online at wildfireworld.org/photocontest for more info.



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Climatologist James Hansen thinks we've been rolling the carbon dice and lately, they're coming up snake-eyes. His recent research seeks to reframe the climate debate with statistics: how probable were recent climate extremes in the absence of climate change? Hansen's statistics (and others') observe that a variety of extremes we've experienced are highly improbable, statistically, without figuring in anthropocentric climate change. In other words, the climate-change impacted dice are loaded, and not in our favor: the more carbon we burn, the more likely the more sides of the dice show "weather extreme."

In January 2011, at the American Meteorological Society meeting, the chair of the National Academy of Scientists, Ralph Cicerone, spoke of integrity and climate science. He reminded the gathering that scientists, in public opinion polls, typically top the list of most trusted professions. Yet recently, they'd been overtaken by firefighters. He went on to note how scientists, meteorologists and applied weather experts have an obligation to openly and forthrightly engage the public on the science of climate change — how we conduct the science and why it matters.

As he was talking, I wondered if our particular profession might offer a hybrid, part scientist and part strategist, that might in turn offer the American public some credible

insights into the necessity and applied practice of facing climate change.

Fast-forward through the record 2011 fire season and halfway through the 2012 season, and I'm wondering again — are we the trusted experts the public needs to hear from? I'd argue that most of us who work in wildland fire either create science or apply it in our prescribed burns, fuels treatments, fire behavior forecasts, safety briefings and burnouts. After all, to get our first Red Card, we have to pass a physics test called "the fire triangle."

As we prepared this issue, the necessity of sharing our expertise was on our minds. We offer an applied science article from China on fire's impact on power lines; we cross continents to Spain for a tactics article on putting hydraulics to work; and we join continents north and south, to examine how countries facing newly expanding fire regimes should share expertise. Plus, we explore the perfect storm of U.S. wildfires and politics while wondering how firefighters may wish to help the public frame a new paradigm for fire management.

They say you make your own luck, and it's what we work to do on the fireline. This issue, we're wondering if it's time we take this craft from the fireline to the public.

—Ron Steffens, Chair, Editorial Advisory Board

Strategic Policy Institute in reviewing disaster policy. Carter hopes that her overall findings will help improve individual economic planning for disaster events, particularly through the means of insurance.

The IAWF has awarded scholarships for advanced studies related to wildland fire since 2007 to students from Mexico, Canada and the Netherlands as well as Australia and the United States. Information on all of the recipients as well as future scholarship application announcements is available at: <http://iaawfonline.org/scholarships.php>.

CHARLES E. VAN WAGNER IS RECIPIENT OF THE EMBER AWARD FOR EXCELLENCE IN WILDLAND FIRE SCIENCE



The International Association of Wildland Fire (IAWF) is pleased to announce the latest recipient of its Ember Award for Excellence in Wildland Fire Science: **Charles E. Van Wagner**, retired Canadian Forest Service senior research scientist from Deep River, Ontario, Canada.

The Ember Award recognizes sustained excellence in wildland fire research and encourages innovation, exploration, application and dissemination of important research results.

The name "Ember" reflects the fact that research and science often move slowly, and their benefits or impacts may not be apparent for years. The award was established to recognize sustained and excellent research contributions to wildland fire science, innovative solutions to important wildland fire challenges, and effective and appropriate communication of wildland fire science and research results.

During his 30-year career (1961–91) as a senior forest fire research scientist with the Canadian Forest Service, Van Wagner was the leading fire researcher in Canada and was respected both nationally and internationally as an imaginative and innovative scientist. His contributions to fire science influenced not only his generation of fire scientists but also current fire scientists throughout the world.

While located at the Petawawa Forest Research Centre (later the Petawawa National Forestry Institute), Van Wagner was most recognized (among many accomplishments) for his vital leadership role in visualizing and developing the current Canadian Forest Fire Danger Rating System (CFFDRS), a system that has served as a foundation for the most important fire management information systems and decision-support tools used across Canada since 1970 —

and one that has been adopted in, or adapted to, numerous countries internationally over the past several decades.

Key component subsystems of CFFDRS, the Fire Weather Index (FWI) System and the Fire Behavior Prediction (FBP) System, were developed after years of dedicated research by a number of Canadian fire scientists; however, Van Wagner was the acknowledged leader of that group, and the person with the broad vision required throughout this process. His research products received, and continue to receive, broad scientific recognition and operational application, a true indication of their value and relevance.

The Ember Award will be presented this October at the Wildland Fire Canada 2012 Conference in Kananaskis Country, Alberta. Congratulations Charlie.

SAVE THE DATE FOR THESE UPCOMING CONFERENCES

The **Twelfth International Wildland Fire Safety Summit** will be held in conjunction with the 12th World Firefighter's Games in Sydney, Australia, Oct. 25-26, 2012. For more information, visit www.iawfonline.org/Sydney2012/index.php.

The **Fourth International Symposium on Fire Economics, Planning and Policy: Climate Change and Wildfires** takes

place in Mexico City, Mexico, Nov. 5-11, 2012. For more information, visit www.fumeproject.eu/?q=node/796.

The **Fourth Fire Behavior and Fuels Conference** is scheduled for Raleigh, North Carolina, Feb. 18-22, 2013, and St. Petersburg, Russia, July 1-4, 2013. It will be presented by the International Association of Wildland Fire and International Association for Fire Safety Science, in conjunction with Tomsk State University and Worcester Polytechnic Institute. For more information, visit www.iawfonline.org/2013FuelsConference/index.php.

INTERNATIONAL JOURNAL OF WILDLAND FIRE (VOLUME 21, NUMBER 4, 2012)

IAWF members have free online access to all research articles and back issues, a great member benefit. The IAWF member page directs you to the Journal, where you can search for your paper, author or fire subject of interest. All papers that have been accepted, even those not yet published in hard copy, can be found on the site.

The fourth issue of the *International Journal of Wildland Fire* in 2012 contains the following papers:

continued on page 34



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Drawing Lessons from the Life of Steve Jobs



Mike DeGrosky is chief executive officer of the Guidance Group, a consulting organization specializing in the human and organizational aspects of the fire service, and an adjunct instructor in leadership studies for Fort Hays State University. Follow him on Twitter @guidegroup or via LinkedIn.

Jobs clearly demonstrated an ability to use his charisma to transform Apple and Pixar.

I recently read Walter Isaacson's biography of Steve Jobs. Until his recent passing, Jobs was the much admired but also controversial CEO of Apple, Inc. Had I not received this book as a gift, I probably would not have been attracted to the subject. I simply have not shared the fascination that many people have with Jobs or Apple. However, I really enjoy Isaacson's writing, and given his success and reputation for revolutionizing entire industries, I was interested in Jobs as a leader.

Isaacson does a great job of painting a portrait of a very complex and complicated man, and the book is an interesting study of a charismatic, transformational leader, as well as a case study of the upside and the dark side of that leadership approach. Isaacson's book also provides an interesting example of the contextual nature of leadership, provoking thoughts about how an effective leader in one environment might not succeed in another.

At 656 pages, *Steve Jobs* felt pretty long, and I admit that I was ready for the end when it arrived. I also confess to a little skimming, mostly because I'm not into technology development war stories. It is hard to be impressed by a story about guys who jammed for two

days straight to produce a disk drive for the Macintosh when you know people who worked for two days to save a subdivision and ended up in their fire shelters. However, Isaacson is an excellent writer, and kept me reading despite the book's length. *Steve Jobs* is based on more than 40 interviews that

Isaacson conducted with Jobs over two years. He also reportedly interviewed more than 100 friends, family members, colleagues, rivals and competitors.

Jobs cooperated with Isaacson on the book and, to his credit, asked for no control over what the author wrote. Jobs put nothing off-limits and reportedly encouraged people to speak honestly about him. They appeared to hold back little, and the reader gets what feels like a truthful and balanced view of Jobs

including his drive, passion, innovation and flair for design, as well as his obsessive perfectionism, rough treatment of people, need for control and tendency to micro-manage. Jobs also seemed to speak honestly, perhaps too honestly, sometimes coming across as ungrateful, callous and arrogant when discussing rivals, competitors, people he had worked with and anyone who displeased him. The quality of Isaacson's research comes through in the book, and the content feels authentic.

Jobs earned a reputation as both a charismatic and transformational leader. The terms charismatic and transformational leadership refer to processes that influence major changes in the assumptions and attitudes of an organization's members, and to the importance of building commitment.

Jobs clearly demonstrated an ability to use his charisma to transform Apple and Pixar. A transformational leader can influence followers to transcend self-interest, commit to challenging goals and achieve more than initially expected. Jobs focused on his unique abilities to motivate people beyond what they would normally do, create a culture in his companies, and transform or revitalize them as necessary.

However, critics of transformational leaders cite possible negative effects of this leadership approach. These include excessive emphasis on motivation and performance leading to a pace-setting style of leadership, favoring management and other elites over the rank and file, transforming people to the point that they work too hard for the organization and burn out, and transforming people and organizations to the degree that they identify with the leader to the point of dependence. After reading Isaacson's book, I came away thinking that all that had occurred at Apple, Pixar and Jobs' other companies to some extent.

As a student of leadership, *Steve Jobs* provoked me to think about the contextual nature of leadership and, in particular, the contingency theory of leadership. The basic premise of contingency theory is that we need to match leaders to appropriate situations. In other words, organizations will match suitable leader

behavior with the follower and the task at hand. Jobs was a dynamic, charismatic and brilliant visionary. However, he had an obsessive and narcissistic personality; could treat people badly, some would say coldly and cruelly; and too often, his vision failed to align with reality. So one must ask whether Jobs' personal brilliance would have enabled him to lead other organizations, particularly in an environment where character counted more than individual talent.

Obviously, people at Apple and Pixar related to Jobs, accepted his influence and followed his lead. Conversely, I have worked in organizations where people would not have followed Jobs to lunch. However, there's no denying the man's influence and success. So, can fire service leaders draw lessons from the life of Jobs? Read the

book and decide. It is long, but well-written and worth the time.

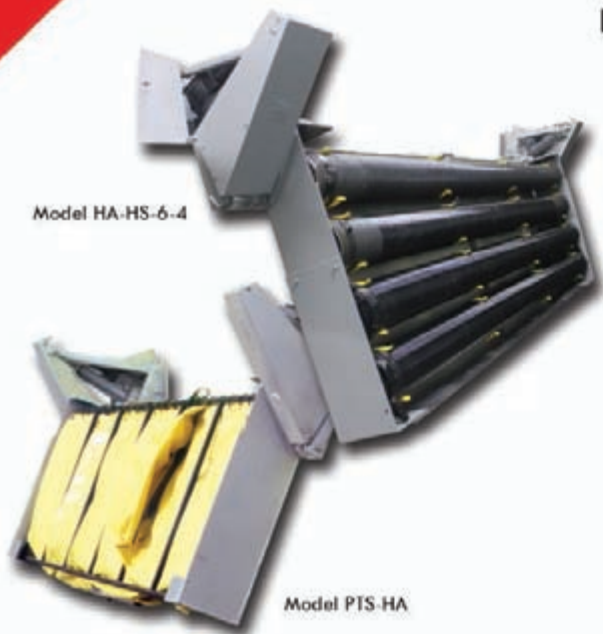
Isaacson does a fine job of presenting a very complex and complicated man using a balanced and factual approach. For students of leadership, the book provides a thought-provoking study of a charismatic transformational leader, from which the reader can draw conclusions about the pros and cons of those leadership approaches. *Steve Jobs* also provides a fascinating example of the contextual nature of leadership that provokes a lot of thought about how an effective leader in one context might not succeed in another. **W**

So one must ask whether Jobs' personal brilliance would have enabled him to lead other organizations, particularly in an environment where character counted more than individual talent.

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Global Wildfire Awareness



*Amid the many talks at IAWF's Human Dimensions Conference this past March, one collaborative presentation examined the crucial role of collaboration amid countries with emerging fire regimes. The authors, led by Wildfire magazine Contributing Editor **Cathelijne Stoof** (The Netherlands and United States), **Lisa Langer** (New Zealand), **Julia McMorrow** (United Kingdom) and **Brian Oswald** (United States), observed that as changing fire regimes increase fire risk, there's an urgency to tackle this vulnerability via international collaboration and exchange. For more of what they've discovered, visit the full article (excerpted here) and conference video at WildfireWorld.org.*

As climate change expands wildfire into new regions, what can the north learn from the south (and vice versa)?

Wildland fires generally are associated with countries such as the United States and Australia and the European Mediterranean, in the boreal North and in the savannas and tropics, all of which have track records of large-impact wildfires with severe social and environmental consequences. Wildland fire is not a natural hazard that is generally associated with countries in some temperate climates, such as the Netherlands, the United Kingdom and New Zealand, that are better known for their vulnerability to floods, snowstorms and earthquakes.

Yet, wildland fire risks are increasing significantly in these countries because of expansion of the wildland-urban interface (WUI) and a climate-change-related increase in the occurrence of extreme weather, such as heat waves and severe droughts. Moreover, lack of awareness and underestimation of wildfire risk has led to under-preparedness, vulnerable communities and stretched emergency services.

For instance, both the United Kingdom and the Netherlands share a position of limited policy, organization and knowledge of fire ecology, fire behavior, fire weather and the human dimensions of wildland fire. And although New Zealand is in many ways ahead of these countries because of its research, response structure, training and exchange, it is at risk of losing

firefighting expertise because of infrequent fire events — unless it continues to link to more fire-prone countries.

In all three countries, wildfire issues “compete” with better-known and more frequent natural hazards such as floods, earthquakes, etc. Communities are, therefore, less aware of wildfire risk, less prepared for fires and vulnerable.

As changing fire regimes increase fire risk and potentially also fire impact, there is an urgency to tackle this vulnerability before accidents happen. There is, however, a need for international collaboration and exchange, because of the limited expertise in the countries at risk.

The discussions at the 3rd Human Dimensions of Wildland Fire Conference (see video online) showed that there is an enthusiastic group of scientists and practitioners from various backgrounds interested in developing a collaborative and international response to these issues. Such a group of enthusiastic experts from around the world can build, teach and train multi-agency networks within and among the countries in need, and help build a regional scientific knowledge base. Such a collaborative effort can not only help increase awareness and implementation of best management practices in these countries but also provide opportunities for “cross-pollination” and worldwide innovation. **W**

ONLINE CONNECTION:

To view this and other talks from IAWF's 3rd Human Dimensions of Wildland Fire Conference, visit WildfireWorld.org.



Photo courtesy of FEMA.

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State of the Flames, 2012: When Firestorms Meet Politics

How fire professionals can help the public – and their leaders – engage in discussions important to wildfire issues.

By Ron Steffens

This year, the U.S. fire season started early. Or did it ever end? Texas' traumatic 2011 season came to a close with rains in November, and by February 2012 wildfires were beginning on the Arizona border. The memories of the 2011 season (Wallow, Horseshoe 2, Los Conchas fires plus the Texas campaign) served as metaphorical holdovers from the 2011 season as



New Mexico burned again as well as Colorado, Utah, Nebraska and South Dakota. Wyoming's August fires arrived in June, and by August fires were burning in California, Oregon, Idaho, Washington and Oklahoma. The August 7 drought monitor placed nearly 80 percent of the country in some stage of the "flash" drought.

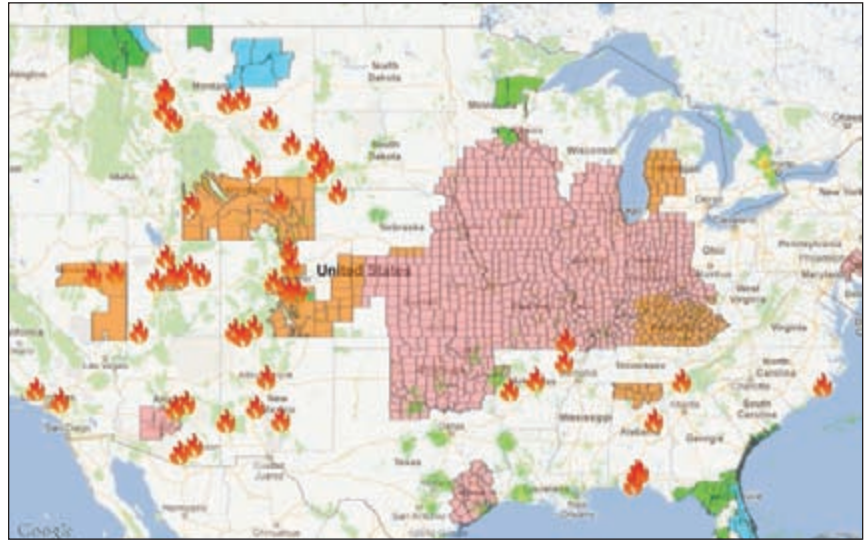
In the media and in our conversations, we talked of wildfires and firestorms, evacuations, lives and homes lost, drought and climate change — all joined with the 2012 election cycle to magnify the heat. Winds aligned with slope and the surface fire of public concern about wildfires jumped into the crowns.

Whether you think of the public's current concern with wildfires as a public policy debate or simply politics, our work as fire managers is more actively framed by the political this season. The debate over funding of air tankers (and of federal fire response, in general) had been invigorated, in small part, by earlier reports that some House staffers had hosted an office pool to guess acres burned, with the tiebreaker decided by how many tankers would either crash or be grounded. In February, Al Qaeda training materials suggested that one mechanism for terrorism would be to ignite landscape-scale wildfires in Montana, reminiscent of Japan's unsuccessful efforts to use incendiary balloons to burn Northwest forests in World War II.

There was no need to wait for the rumor of terrorists to come home. Lightning and carelessness (and reports of arson, and at least one incendiary pipe-bomb, most likely homegrown) would provide ignitions enough.

At one point in late June this year, the national map of wildfires in the United States showed fires burning from the East Coast to the West and from New Mexico to Montana.

President Barack Obama meets firefighters on the Waldo Fire, Colorado.



Fires across the country, from the Atlantic to the Pacific, from the U.S.-Mexico border to nearly Canada. Wildland Fires and Red Flag Warnings (orange) on June 27, 2012.

Thousands of homes have burned in an uncountable number of major fires; year to date (as of August 14), the nearly 43,000 fires were down nearly 10,000 fewer than average, yet the 6.5 million acres burned were up 1.5 million acres than the 10-year average.

Of these fires, two of concern were the result of escaped prescribed burns (with homes and lives lost in Colorado in March, and homes threatened in North Carolina). Other events framing the season: two of the 11 remaining federally contracted air tankers crashed in a single day, leaving two aviators dead. A second crash in early July of a North Carolina National Guard MAFFS-equipped plane killed four and injured two.

At least one message to draw from this intense season is one we've noted before: fewer fires are burning more acres. Yet, this growing acreage per fire occurred in a year when the U.S. Forest Service implemented an emergency suppression policy, aimed to catch fires in initial attack, to respond both to the effects of drought and budget constraints.

In the United States, this is a presidential election year, a time when we publicly review and debate our priorities, often with the priorities shaped by whatever catches fire (pardon the pun)

in the news cycle. And while mid-season monsoonal moisture calmed the season in mid-July, this summer may already be one of the more active fire seasons during a presidential campaign since the 1988 fires.

Yet, this summer is also the first of many years when federal budget limits will directly ask fire managers (and firefighters, and communities) to prioritize how to manage fires with less support — in some cases (or worst cases), with far less support than our accepted staffing levels call for. We're asking, how do we implement a suppression directive with limited resources? How to manage acceptable risks with scarce resources and fires that grow (to apply the often misapplied metaphor) like wildfire when drought, beetle-killed timber, under-managed fuels and fire starts combine?

THE TOOLBOX OF PUBLIC OPINION: FRAMING FIRE

If someone offered up a tool that could recruit, harness and fund thousands of firefighters and planners, logistic support and circling aviation in the sky, we'd order it up in a minute. We have such a tool — call it public opinion, good will, the political process, or just plain and simple "politics."

America's Fires

As fire professionals, we typically stay safely (and often wisely) within our team of fire managers and out of the public arena — except in sanctioned planning processes, such as while pre-treating or evacuating neighborhoods, or in communication and education programs (think

Smokey Bear, Firewise, et al).

There's good reason to refrain from the political — it's not what we're trained, certified and authorized to do, and for federal employees, it's downright illegal (e.g., the Hatch Act). Yet, there are effective and ethical ways in which our expertise can be applied

Helping the public talk about the choices that fire managers face today, by talking about the need for fire planning and policy reform, is not politics; this is as much our job as facing the fire.

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in the public arena. Some call it “framing” — to engage in public dialogues, openly and ethically and apolitically, as experts and facilitators, tooled up with terms and concepts that are likely to resonate with an audience’s concerns and frame the discussion.

This framing need not be (nor should it be) in support of a candidate or a specific policy. When done right, framing connects an audience’s concerns with the communicator’s concepts, using language that resonates and leads audiences toward their own insights and engagement. Helping the public talk about the choices that fire managers face today, by talking about the need for fire planning and policy reform, is not politics; this is as much our job as facing the fire.

A truism in media studies holds that what is selected for print or broadcast (or in tweets and blogs) may shape the discussion but not define the answers. With enough mass in the media, a widely covered topic helps guide the public toward what to think about, not what they actually should think. Media this year has covered air crashes, megafires, firestorms, public and firefighter deaths, and threatened or burnt neighborhoods. Less so the growing scientific consensus that increased wildfire activity may be correlated to climate change, with less than 3 percent of media coverage discussing the growing consensus that climate change is affecting fire regimes, length of burning seasons, and the intensity of both drought and resulting fires.

Some media are exploring the depth, details and frame-changing elements of this season. In a more policy-oriented focus, the *Boulder Daily Camera* investigated the Fire Program Analysis (FPA) budgeting process that guides everything from how we staff engines to what fuels projects are prioritized. Yet, as the reporters point out, the planning program itself has been stalled for years.

From *The Guardian*, Suzanne Goldberg's reporting highlighted a 15 percent reduction since 2010 in federal funding for prevention and management of wildfires. And *The Christian Science Monitor* offered this frame:

Climate change has left vast swathes of land tinder-dry, controlled burns to manage undergrowth have been discontinued, and more homes are being built in previously wildland areas. The result: "Over the past 10 or 15 years, we have more megafires than in the past," says Mr. Smurthwaite.

The factors leading to more megafires are unlikely to change unless addressed, leading to a sense of urgency within the firefighting community.

Within the political realm, we've seen two presidential addresses on fire (one on lost homes in Colorado from the Waldo Fire, one to memorialize lost firefighters) and fireline and National Interagency Fire Center NIFC visits by the secretaries of Interior, Agriculture and Homeland Security. Both the Ag and Homeland Security secretaries have offered statements tying climate change to wildfires.

FROM ISSUE TO FRAME

There've been a few specific results of this focus on fire in the political limelight: an online petition calling for health insurance for seasonal firefighters gathered more than 100,000 signatures and a presidential decision to add red-carded federal seasonals to federal healthcare eligibility. And a bill proposed by three senators may transition surplus planes from the Air Force to the tanker fleet.

Think of these topics not as policy statements, nor the sort of pre-season "talking points" that agencies circulate to help frame the work of public information officers. Rather, how might the typically internal analyses and questions we raise in fire camps and conferences be applied to frame public dialogue

about the jobs we're asked to do.

We can't offer a comprehensive list of concerns (that is all our jobs), but a primer on framing can help us connect our concerns to the public. A few details, digested from "Framing Public Issues" by the Frameworks Institute, suggest a few techniques.



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Aerial photo captures houses in the foreground while the Waldo Canyon Fire burns in the background.

For instance, their guide reminds us to not start with the claim you seek to disprove — since if you plant the “bad idea” in the audience’s mind first, you’re embedding the very frame you seek to disprove. Don’t start with “Airtankers are expensive but worth the cost.” Instead, a “framed” dialogue might be: “When used in initial attack, airtankers within range can help contain costly interface fires. Too few airtankers mean they’re often out of range, and the lack of air support has been one factor that’s led to homes burning — which is both a financial and a community loss.”

Many would argue that the next sentence might include the most cost-effective way to manage urban interface fires — for homeowners, communities and governments to manage their fuels.

The basic tenets of framing, according to the Frameworks Institute guide, are rooted in three key questions to ask when you seek to communicate on public policy:

- How do we get people to think about our issues?
- How do we get them to think about our issues in such a way that they will want to solve them through public policies, not only through individual actions?

- How do we get them to think about issues in such a way that they want to solve them through *our* public policies?

Additionally, their summary of research outlines how the framing process works:

- People use mental shortcuts to make sense of the world.
- Incoming information provides cues about where to “file” it mentally.
- People get most information about public affairs from the news media which, over time, creates a framework of expectation, or a dominant frame.
- Over time, we develop habits of thought and expectation and configure incoming information to conform to this frame.

WHAT TO FRAME

If framing is a tool we might apply, then what concerns should we focus on? We’ll leave the prioritizing to you. But to sense how a framed communication process might help, here are a few topics and a first scratch-line version of a frame:

- 1 FUELS.** *Forests without fuels management plans may burn with consequences we’ll regret. If we learn from the forests we’ve lost, we can avoid future losses.*

FRAME: America is a nation of forests. We cherish shade, habitat, protected watersheds, and the fuel and timber they provide. Yet, as forests age and climate changes, we must act to save the forests we own and share.

- 2 BUDGETS.** *Shrinking budgets impact training, interagency coordination, staffing and integrating science.*

FRAME: Fires cross borders. We firefighters work across forests and boundaries and communities. But we need to know each other if we’re to help each other. So we train together, plan together and apply the best science we can to face the challenge of wildfire and forest management.

- 3 URBAN INTERFACE.** *The problem isn’t fires, it’s people living amid under-managed fuels. Is this a valid statement, or have fires and fuels in the climate-change era changed in their buildup and potential intensity? And if so, should we change our strategy, tactics and policies?*

FRAME: We’re changing our strategies to manage these megafires. Are you?

- 4 CLIMATE CHANGE.** *The problem is fires — and carbon is, in part, the cause of larger and more intense fires, and longer and more intense fire seasons. Regional or national carbon-management plans might maintain a more stable fuel base, both sequestering carbon (a net value to offset the cost) and mitigating fuel hazards to communities.*

FRAME: Our children’s forest will be different from our parents’ forest. We’ve seen change in wildfire intensity and size, and our changing climate is one cause of this. The forest is changing, and we’re working to apply prescribed fire and fuels management to prepare our forests and communities for more fire.

TALKING FOR CHANGE

Wherever we want our profession to go, it will involve long-term but urgent policy review and revision. But what

we can immediately impact is our relationships between fire managers and their constituents.

When you do, refer to authoritative journalism that covers fire in your area of concern and discuss the policies that our professional organizations support, such as IAWF's and the Association of Fire Ecology's statements on climate change and fire. Ask what people think about the recent media coverage. And refer to IAWF President Dan Bailey's commentary on the question offered in response to the *New York Times*' question, "Does the Government Cause or Prevent Wildfires." Bailey suggests that:

This debate clearly articulates that it is time for a thorough examination of U.S. wildland fire programs, including the costs, the duplication of efforts between agencies, who is actually in charge, what are we paying for and most importantly have past efforts begun to make a difference? With billions of taxpayer dollars expended over the past several decades, the simple and indisputable fact is that we are not seeing less wildland fire or a substantial reduction in fatalities, homes lost or costs.

Bruce Courtright of the Institute for the Elimination of Catastrophic Wildfire recently spoke to the IAWF board and expanded on Bailey's concern, echoing the core concepts of National Cohesive Strategy:

Fire is good and it's important to be managed for that. But with fuel buildup and climate change — when we get to catastrophic fires, we're finding the fires are destructive. The soil turns to silica. One million acres were treated [in fuels and forestry management programs] this year, but we need something like 80- to 100-million acres to be treated.

Courtright and others are looking at "innovative game-changing legislation" that might propel us into this new fire regime with guiding law and policies to match the era. What's more, Bailey is sending an IAWF Letter to the White House calling for a national fire forum to address this expanding national crisis.

To paraphrase Woody Guthrie — the Dustbowl singer who would have been 100 this summer and who would recognize our drought — perhaps we should wonder — if this land is, in fact, our land, then aren't these fires our fires, from sea to shining sea? And if we are to own these fires, as communities and professionals and as a nation, shouldn't we, as experts, be actively inviting the public to share our concerns and join us to face our national fire challenge? **W**

Ron Steffens is chair of the IAWF Editorial Advisory Board and a professor of communications at Green Mountain College. In summer seasons, he works as a fire monitor at Grand Teton National Park/Teton Interagency Fire.

See full article on WildfireWorld.org for ongoing coverage and a list of sources, including IAWF's Letter to the White House calling for a national wildfire forum.



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Facing Increasing Fuels with Quick Water Deployment

As wildland fuel builds up in Europe, firefighters have adopted quick water deployment tactics to increase Initial Attack speed and success.

By Juan Caamaño

In Mediterranean Europe, the last few decades have been characterized by dramatic land use changes. The abandonment of farmland and reduced grazing has led to an increase in wildland areas. These changes in the landscape have contributed to a more aggressive spread of large wildfires (LWF) all over Europe.

The response of most European societies to this problem has generally been to strengthen fire suppression policies with the overall aim to increase their fire suppression capacity. Despite the high investment in fire suppression efforts, wildfires are becoming larger and more intensive, with faster spread rates, which offer only few opportunities for the suppression systems.

This, combined with a growing Wildland Urban Interface (WUI) area, is becoming a huge challenge for firefighters. The need to protect people and their homes is overwhelming their



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Above: Organization of the water line by functions. Right: Progress of the development of the water line. BRIF crews similar to Hot Shot crews are trained to do long water lines during fire suppression operation.

capacity and number. To avoid this issue during high-risk fire situations, a quick response with appropriate suppression resources is needed.

THE RIGHT APPARATUS

When WUI fires erupt in Spain, firefighters rely on a crucial resource, engines with different water capacities. These include Type I: 5,000–12,000 liters, Type 2: 3,000–5,000 liters and Type 3: 1,500 liters.

Other elements in their firefighting arsenal include equipment necessary to build water lines and transport water to the place needed for suppression. Nozzles, for example, can regulate the water volume (liters/minute) and also the width of how water is dispensed, adapting the flow to the type of fire.



JUAN CAAMAÑO

Flexible hose is used to fight fires in grass, brush and trees where light-weight equipment is needed to maneuver over steep or rough terrain. It is typically built with synthetic fiber.



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Bifurcation permits the development of more than one water line from one engine.



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PERSONNEL PLACEMENT

For the development of the water lines during fire suppression operation, effective initial attack response requires an automatic response by the responding personnel. Each firefighter involved on the water line will have specific assigned functions that, in turn, support an innovative multiple-nozzle progression that gets water to longer flame front in less time.

In Spain, for example, personnel are often organized in the following manner:

- **No. 1: Nozzle.** In charge of the application of the water to the fire.
- **No. 2: Support to No. 1.** Must have communication with the engine and will lead the water line.
- **No. 3:** Attaches new hoses to the water line as it progresses.
- **No. 4:** Feeds No. 3 with hoses; supervises the water line and clamps the water line so No. 3 can attach new hoses.

- **No. 5:** Feeds No. 4 with hoses and supervises the water line.

- **No. 6:** Manages the engine pump and communicates with No. 2.

Fires in the Mediterranean region usually are fast fires that put structures in danger very quickly, so the response of firefighters and engines must also be fast — as well as the development of water lines. For that reason, light equipment that is easy to transport is used.

What's more, it's very important that each firefighter involved in the development of the water line knows the line's functions. This will improve the safety and efficiency of the operation. **W**

Juan Caamaño is a program manager with the Pau Costa Foundation, which seeks to promote fire ecology research and create knowledge, tools and techniques for operational wildfire management, conveying them through training and other capacity-building measures. He is based in Catalonia but focused on European and international outreach. He's a long-time member of the GRAF units in Catalunya, Spain, and currently serves as a helitack manager throughout southeast Spain.

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Mighty Sparks

Wildfires trigger the breakdown of high-voltage transmission lines in China.

By Dr. Haixiang Chen

High-voltage transmission lines form the skeleton of electric grids, linking power generation stations to far-away consumption markets. These lines run for hundreds to thousands of kilometers across forests, mountains and valleys, and are vulnerable to wildfires. Nearby flames or the smoke plume can trigger a flash between the line conductors and the ground (or the trees), or between conductors. During the flash, the transmission line voltage drops rapidly.

Usually, the automatic self-protection of the transmission system can quickly act and reestablish the voltage to normal levels. This is because the control

system is designed to avoid lightning-caused flashes. However, this measure does not work well for wildfires because after the first flash, fires often produce second and more consecutive flashes. Thus, the voltage drops again and again, until the control system breaks down and the transmission line is disconnected. This kind of breakdown is very harmful for the power grid and may cause disastrous black-outs and costly repairs.

Firefighters should be cautious of these wildfire-induced flashes. When suppressing a fire near high-voltage lines, personnel should be at a much longer distance from the lines than under normal no-fire conditions.

BREAKDOWN INVESTIGATION

In China, there are many high-voltage transmission lines linking the major power generation plants in the West to the huge power consumption market in the East. The threat from wildfires is significant. For example, according to the company China Southern Power

Grid¹, wildfire induced 33 breakdowns of 220 kV and 500 kV transmission lines in southern China from 2006 to 2010. The faults occurred mostly during spring afternoons, when the wildfire danger is the highest of the year. Most wildfires that caused a line breakdown were uphill on sunny slopes, where flames are larger. The fuels were shrubs, grasses, and eucalypt and pine trees. The subsequent investigations showed that most breakdowns occurred between line conductors to the earth (tree or ground) and just a few between conductors. The shortest height of the line at the point where breakdown was detected was 6.5 m above ground. (See Figure 1.)

FLASH EXPERIMENTS

Wildfires trigger flashes due to the electric interactions between power conductors and flames and smoke through the following three possible mechanisms:

- **Electric conductivity of the flame.** The thermal and chemical ionization processes typical of

Figure 1



Pictures of 500 kV transmission lines during a wildfire (left) and after the wildfire (right) in Wuzhou, Guangxi Province, China.

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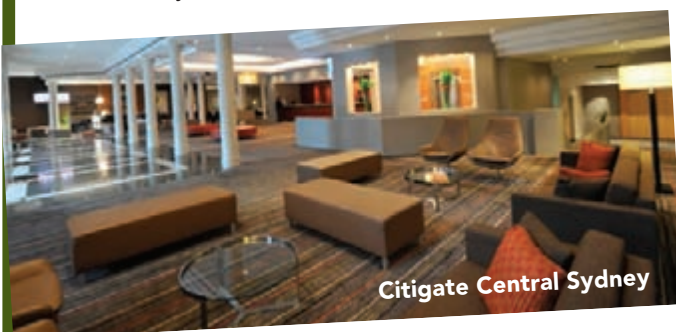
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Applying Science

combustion release large amounts of ions and electrons, thus making flames much more conductive of electricity than air. A flash is much easier to be initiated across a flame than across air.

- **Reduced density of air.** The air density near wildfire is reduced due to smoke and heating, which makes the flash initiation easier.

- **Particulate matter.** The large amounts of small carbon particles (soot) produced by wildfire can cause the distortion of electric fields and induce a flash.

In order to investigate this flash-initiation phenomena in high-voltage transmission lines, small-scale fire experiments were conducted at State Key Laboratory of Fire Science (SKLFS), China². The experimental setup is shown in Figure 2 and consists of wood cribs burning under a simulated transmission line. The fire characteristics such as flame height, mass loss

Figure 2



Photos show the breakdown flashes induced by the flame (left) or the plume (right) during small-scale experiments at SKLFS.

rate, burning time and temperature profile were measured.

A four-bundle conductor was hanged at different heights from 1.5 m to 2.5 m above the fire and connected to a high-voltage generator. During the burning period, the voltage of the conductor was

increased gradually until a breakdown flash occurred. A flash could be produced within a few minutes of burning, and thus several flashes were archived during a typical single fire test.

For comparison, a series of flash tests were also conducted without fire

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(in ambient air). The easy breakdown is quantified by the strength of the electric field at the instant of breakdown. This is the voltage difference per unit height between the conductor and the fire base (in kV/m). The lower this strength is, the easier it is to break down the line.

The experimental results show that the breakdown field strength sharply decreases under fire conditions. The average value of breakdown field strength in air is 280-340 kV/m, while in fire conditions it is 90-120 kV/m. This is equivalent to decreasing the normal transmission line height by three times. The experiments also show that flames are 50 percent more prone to producing the breakdown than smoke.

An additional experiment was conducted to infer the role of airborne ash. Some potassium chloride powder was dispersed over the cribs, and the value of breakdown field strength decreased to 70 kV/m. This happened because

potassium chloride, an inorganic powder, is ionized inside the flame, increasing the electric conductivity. The test indicated that the ash contents in forest fuel may facilitate the breakdown if it goes airborne (i.e., during suppression operations).

RISK ASSESSMENT

Based on these results, a framework to quantify the risk of wildfire-induced breakdown of high-voltage transmission lines was developed. The framework consists of three modules: wildfire simulation, breakdown criteria and risk assessment. The wildfire simulation module calculated flame heights and plume temperature profiles. The breakdown criterion was set to the value of the electric field strength measured in the aforementioned flash laboratory experiments. And the risk assessment module evaluated the breakdown risk of the lines.

A prototype of the framework has been designed and is under further validation for use in risk identification and vegetation clearance in the management of transmission lines in China. More studies on the topic would help reduce wildfire threat to the high-voltage transmission lines. **W**

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Dr. Haixiang Chen is associate professor at State Key Laboratory of Fire Science (SKLFS), China. SKLFS is the national research institution in the field of fire science. Wildland and urban interface fires is one of the five topics of SKLFS. For more information, please visit <http://en.sklfs.ustc.edu.cn>. Dr. Chen can be contacted via email at hxchen@ustc.edu.cn.

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*Compiled by
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HOT SHIELD USA FACE PROTECTION

The **Hot Shield Wildland Face Protector Mask** is designed by firefighters to protect face and neck areas while providing a measure of respiratory relief. The HS-2 model is a multiple-layer face mask made of CarbonX materials, third-party tested to achieve a RPP rating of 11 cal/cm² and a TPP rating of 10 cal/cm² (single layer) and withstands over 2,000 degrees F. The integral filter pocket accepts low-level N-95 particulate filters, fastens at the neck and hangs below the face until ready to deploy. The wash-and-wear mask, with reflective trim for nighttime visibility, is designed for intermittent use. www.hotshield.com

BOA TECHNOLOGY CLOSURE SYSTEM

Boa reels and laces for work boots stay secure once they are locked into place. Made from aircraft-grade steel, laces are stronger per gram than tank armor. Reels are micro-adjustable, offering degrees of fine-tuning for an exact fit. They are quick to take on and off. What's more, they provide on-the-fly adjustability with a quick turn of the Boa dial. Using the patented **Boa Closure System** instead of laces adds safety, security and improved comfort for all-day wear. The Red Wing Shoe Company recently partnered with Boa Technology to produce several new work boot styles, including the #2491 (pictured). www.boatechnology.com



THE SUPPLY CACHE WILDLAND FIRE GEAR

Easily outfit your whole crew or purchase the **StrikeForce Outfitters Package** just for yourself. The Outfitters Package includes one pair of Strikeforce Gear 6-oz Green Nomex Brush Pants, one Strikeforce Gear 6-oz Yellow Nomex Brush Shirt and one Bison Last Chance Belt. Contact The Supply Cache at 1-800-839-0821 to place your order. www.supplycache.com



STARFIELD LION FIREFIGHTING APPAREL

The Starfield LION NFPA 1977-compliant **wildland firefighting apparel** is available in two styles of jacket and pant ensembles (LA Series or Protec), or as a one-piece coverall. Professionals choose from one of three 1977-compliant materials: Indura Ultra Soft, Nomex IIIA or PBI Triguard. Major seams include double-needle sewing for maximum durability. Garments are designed with pocketing, comfort and visibility to meet your requirements. www.starfieldlion.com

CARBONX FLAME-RESISTANT FABRICS

In field tests conducted over the course of several years and across multiple applications, **CarbonX** fabrics —

PPE Updates

used in baselayer garments, gloves, balaclavas/hoods, socks, jackets, pants, shirts, outerwear and other applications — have consistently proven their ability to withstand heat and direct flame up to 20 times longer than other flame-resistant (FR) products. Constructed using advanced technology, CarbonX fabrics are comprised of a

proprietary blend of high-performance fibers and are inherently flame-resistant. CarbonX fabrics will not burn, melt or ignite. Even after intense exposure, they maintain their strength and integrity and continue to protect. CarbonX products combine comfort



with an extreme level of protection. They are lightweight, flexible and odor-resistant. They also breathe well, wick away moisture and dry quickly, enhancing the wearer's comfort and

productivity. Their thermal protective properties will not wash out or wear away. www.carbonx.com



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SKIDTANX by **Wildfire** is a line of fast attack skid units that feature intuitive designs which make operating them amazingly simple. The **WATERAX** pump at the core of each unit produces high pressure water flows and guarantees reliability and flawless performance. The newly launched **TORPEDO** units boast best-of-breed components which ensure that no matter how you choose to customize your unit, you will be armed for success.



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TheFireStore.com, a division of Witmer Public Safety Group Inc., offers rugged footwear including the **TrailStalker Duty Hiker**. It blends athletic shoe styling, cross-trainer agility and waterproof-breathable comfort and support into a lightweight Gore-Tex hiking boot. Professionals can walk, run, ride or work out in comfort in dry or wet weather. www.thefirestore.com

5.11 WILDLAND APPAREL



Fire season is here, and 5.11 Tactical is offering NFPA/FR 1977-2005-certified **Wildland Apparel**. The Wildland Woven Brush shirts and pants

are made from an 88 percent Cotton/12 percent Nylon Milliken Amplitude fabric. The lightweight, long-sleeve over shirt has a stand-up collar with hook-and-loop closure. Shirt is easy to close with large button-up design and covered placket. Two chest and two arm flap pockets can be closed with hook and loop, and the arm cuffs are adjustable. The midweight pants feature YKK Nomex zippers, Nomex thread and Prym snaps. A self-adjusting waistband offers additional comfort, and a gusseted crotch gives freedom of movement. Also included are extra-deep front pockets and large bellow cargo pockets. www.511tactical.com 

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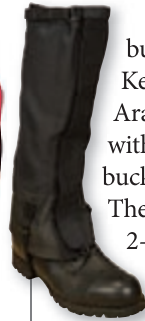
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The DragonWear FR Leg Gaiters feature Kevlar/Nomex Rip-stop uppers and waterproof Ara-Shield on the bottom. They are secured on top with 3/4-inch wide fire-resistant (FR) webbing and buckle, and hook to the boot lace on the lower edge. The whole leg gaiter is secured with rip-and-stick, 2-inch wide FR Velcro closures to allow for easy on/off; a tapered ankle design provides a snug fit. **True North LLC** | www.truenorthgear.com

Leg Gaiters

Leg gaiters provide continuous protection between the lower pant leg and the boot, protecting users from foul weather, pant legs shredded by thorns, flash fires and flame/ember

Brush Shirt

The Coaxsher CX Wildland Vent Brush Shirt's Xvent system allows body heat to escape easily through vent openings while letting in cool air to keep professionals comfortable. The vent openings are backed with a lightweight aramid material to ensure protection; each opening features a Nomex YKK zipper for convenient opening and closing. The shirt is UL-certified to NFPA 1977-2005 specifications and is backed by a manufacturer's lifetime warranty. **Forestry Suppliers Inc.** | www.forestry-suppliers.com





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