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May/June 2013
Volume 22 Number 3



A CL-215 "Super Scooper" on the Minidoka Complex. The Ops Branch Director observed that "use of the scoopers finally gave us the opportunity to grab some line and start going direct in tough terrain."

PHOTO: MINIDOKA COMPLEX, INT

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Looking towards Mt. Washington near Sisters, Oregon (2012). This landscape in Central Oregon has experienced multiple recent wildfires and now contains distinct patches of reburn from fires in 1999, 2003, 2008 and 2011. *Wildfire* Photo Finalist by Garrett Meigs.

Backstory, Part I: It's About the WUI Facts



Dan Bailey

Many of us in the wildland fire community have been frustrated by the absence of basic statistical information about the U.S. wildland fire problem, specifically the wildland/urban interface (WUI). Not pointing the finger of blame at any one group or organization, there are just no good statistics that help us describe and understand this growing crisis.

In a recent publication by the International Code Council (ICC) and the National Resource Conservation and Development Council (NRC&D) *Wildfire Safe, Sound and Code Smart* project, a new WUI fact sheet has helped document some interesting facts and figures that begin to help better understand the history and trends of this growing problem.

With well over two dozen complex definitions of what a WUI is, it has become hard to explain in simple terms. However, this fact sheet highlights the issue with a simple and straightforward definition of WUI: *"being a geographic location where structures and flammable vegetation merge in a wildfire-prone environment."*

The document helps describe the geography of the problem, highlighting that the United States encompasses about 2.3 billion acres of land. Within these acres are 1 billion acres of government (federal, state and local) and privately owned wildlands (without structures). In addition to these 1 billion acres, there exists well over 220 million acres (twice the area of California) that have been designated by each state forester as at high-risk of WUI fire.

This is not a static figure. Increased development near wildlands is ever-accelerating the growth of WUI areas. According to the Natural Resource Conservation Service, since 1990, the United States has experienced an unprecedented conversion-growth rate of 3 acres per minute, 4,000 acres per day and close to 2 million acres per year of conversion from wildlands to WUI.

Research by Headwaters Economics of Bozeman, Montana (www.headwaterseconomics.org), indicates that in the West, on average about 14% of the available WUI lands have been developed, and 86% remains available for development. For example, the state of Washington has 21% of its available WUI developed and 79% undeveloped. Montana has developed 9% of its WUI while 91% is undeveloped; Arizona weighs in with 17% of its WUI developed and 83% undeveloped. Nationally, these figures have not been verified, but projections are that about 30% of the WUI has been developed with 70% still available for future development.

As we take a closer look at the 220 million acres identified as WUI and look at the demographics from the U.S. Census, we see how this issue continues to be compounded. The fact sheet highlights this growing issue from the 1960s, when our population was 180 million, with only about 20 million people calling the WUI home. Today, our population has grown to more than 300 million people, with 120 million living in these fire-prone areas.

What census figures are telling us today is that of these 46 million homes, 25% are more than 10 years in age and 21% are less than 10 years old. Even in our sluggish economy, projections are that over 8 million new homes will be constructed in the next 10 years; with a bullish economy that figure triples. What is interesting is that of the 46 million homes in the WUI, only about 35% meet any type of building, fire or WUI code.

Such an array of facts and figures provides a good start to help pinpoint WUI issues. But we need more. We need solid statistics — historical data and research — to help all stakeholders involved to understand the complexities of WUI issues and step up to solve the challenges.

Dan W. Bailey



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IJWF Names Dr. Andrew Sullivan Outstanding Associate Editor



The *International Journal of Wildland Fire* warmly congratulates Dr. Andrew Sullivan on his award of Outstanding Editor for 2012. Dr. Sullivan has been serving the *Journal* in this capacity since 2009 while working at CSIRO

the CSIRO Grassland Fire Spread Meter, the Fire Spread Meter for Northern Australia and the CSIRO-Modified McArthur Mk 4 Grassland Fire Danger Meter.

He worked on Project Vesta from 1998 to 2001, investigating the behavior of forest fires under dry summer conditions. This work involved conducting 22 experimental fires in Western Australia over two summers.

He has authored several books, including one fictional piece, *A Sunburnt Country* (Sullivan 2003), and over 25 refereed journal papers. He recently co-edited a special issue of *Journal of Combustion* on developments in wildland fire science, in addition to contributing to research on potential fire extent for Western Power. He currently delivers components of the Fire Behaviour Analyst course for New South Wales, Victoria and Queensland.

Dr. Sullivan has received several awards, including the 2009 CSIRO Sustainable Ecosystems Divisional Reward, the 2009 CSIRO Climate Adaptation Flagship Recognition Award, the 2007 Inaugural IAWF Wildland Fire Scholarship for Graduate Studies and the 2003 CSIRO Medal for Scientific Achievement.

We are pleased to add the 2012 IJWF Outstanding Editor Award to this list, and most heartily congratulate him on his achievement.

INTERNATIONAL JOURNAL OF WILDLAND FIRE

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 and/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 second issue of the *International Journal of Wildland Fire* in 2013, Volume 22 (2) 2013, contains the following papers:

- “Effect of land-cover change on Africa’s burnt area,” J.M. Grégoire, H.D. Eva, A.S. Belward, et al;
- “Satellite-based comparison of fire intensity and smoke plumes from prescribed fires and wildfires in south-eastern Australia,” Grant J.

Ecosystem Sciences as head of the Bushfire Dynamics and Applications (BDA) Group. His research covers the areas of fuel dynamics, fuel availability, fire behavior and fire management. In essence, this work provides the science and technology to meet the needs of land and fire management agencies for prediction, management and suppression of bushfires in Australia’s changing climate.

In this role, Dr. Sullivan acted as CSIRO media spokesperson on fire behavior as part of CSIRO’s involvement in the post-Black Saturday fire investigations and reconstruction of the fuel moisture content, spread and behavior of the Kilmore East fire. He analyzed fire events at Kinglake West for the Victoria Police Phoenix Taskforce and appeared before the Royal Commission on the 2009 Victorian Bushfires to give evidence on the Kinglake West fire.

Dr. Sullivan joined CSIRO in 1991. He has an educational background in physics, computing and modelling, combustion, thermokinetics and fluid dynamics. In much of his past work, Dr. Sullivan studied bushfire spread and behaviors developing computer-based fire spread models; he also was involved in developing, designing and coordinating the production of



At-a-Glance

Fourth Fire Behavior and Fuels Conference continues
July 1–4, 2013
St. Petersburg, Russia

International Smoke Symposium
October 21–24, 2013
The University of Maryland, Adelphi, Md.

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

Wildfire Magazine Receives “Award of Excellence”

We are pleased to announce that the March/April 2011 issue of *Wildfire* magazine recently earned an Apex “Award of Excellence” in the “Magazines & Journals – Print Over 32 Pages” category. Thanks to all who supported that issue (and all the rest) as we continue to bring you the best in professional practices, news and tools to resolve the challenges we face wherever wildfires and bushfires are burning.

BRIEFING | After Action Review



As we gathered the articles for this issue, a theme began to appear. Rather than doom and wagon-circling at current budget woes, the writers were bringing an open and supportive look at what we do well in our profession, as well as what we can and need to do better.

And what mechanism did the writers choose to move us forward? In article after article, the After Action Review appeared. It begins with Bob Mutch's comments on how we must frame a more sustainable fire policy — a frame, he suggests, that would be inspired if the Forest Service conducted an "After Action Review" of its 2012 suppress-all-fires policy that made little ecological (or fiscal sense), in the minds of Mutch and many seasoned fire observers. Regardless of the outcome of that AAR, he suggests we all need to do our own work in framing our future.

Next, we pair comments by Walt Darran on the U.S. air tanker program with a Field Report by Rich McCrea on how new

aviation resources are integrated into incident operations. Again, the value of an AAR shapes the articles.

And Kathy Clay's report on how we can (and must) support behavioral health in firefighters reminds us that a solid ICS structure and meaningful AARs can offer the strongest tools to prepare us to manage both the incidents and the post-traumatic stress of our occupation.

Finally, we close with our second column in a new back-page section — simply called "After Action." In this issue, Wesley Page, a firefighter transitioning to fire researcher, wanders the IAWF's recent Fuels Conference, searching for the trends and advice that might guide our next decades.

What works, what could work better next? The answer from our fireline and institutional AARs are what we, as torch-bearers and fire experts, must share both within and beyond our ranks.

—Ron Steffens, Chair, Editorial Advisory Board

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Williamson, Owen F. Price, Sarah B. Henderson and David M.J S. Bowman;

- “Smoke plume height measurement of prescribed burns in the south-eastern United States,” Yongqiang Liu, Scott L. Goodrick, Gary L. Achtemeier, et al;

- “Field validation of a free-agent cellular automata model of fire spread with fire-atmosphere coupling,” Gary L. Achtemeier;

- “Influence of short-interval fire occurrence on post-fire recovery of fire-prone shrublands in California, USA,”

Caitlin L. Lippitt, Douglas A. Stow, John F. O’Leary and Janet Franklin;

- “Measurements of convective and radiative heating in wildland fires,” David Frankman, Brent W. Webb, Bret W. Butler, et al;

- “The effect of sampling rate on interpretation of the temporal characteristics of radiative and convective heating in wildland flames,” David Frankman, Brent W. Webb, Bret W. Butler, et al;

- “Wildfire ignition-distribution modelling: a comparative study in the Huron–Manistee National Forest, Michigan, USA,” Avi Bar Massada, Alexandra D. Syphard, Susan I. Stewart and Volker C. Radeloff;

- “Fire history in the *Araucaria araucana* forests of Argentina: human and climate influences,” I.A. Mundo, T. Kitzberger, F.A. Roig Juñent, et al;

- “Fire return intervals within the northern boundary of the larch forest in Central Siberia,” Vyacheslav I. Kharuk, Mariya L. Dvinskaya and K. Jon Ranson;

- “Estimating US federal wildland fire managers’ preferences toward competing strategic suppression objectives,” David E. Calkin, Tyron Venn, Matthew Wibbenmeyer and Matthew P. Thompson;

- “Airtankers and wildfire management in the US Forest Service: examining data availability and exploring usage and cost trends,” Matthew P. Thompson, David E. Calkin, Jason Herynk, et al;

- “The effects of personal experience on choice-based preferences for wildfire protection programs,” Thomas P. Holmes, Armando González-Cabán, John Loomis and José Sánchez;

- “Econometric analysis of fire suppression production functions for large wildland fires,” Thomas P. Holmes and David E. Calkin;

- “Bark beetle outbreaks, wildfires and defensible space: how much area do we need to treat to protect homes and communities?” Glen Aronson and Dominik Kulakowski. **W**

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Resilience in the Time of Stupid



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.

Apparently we are living in the age of austerity, an economic philosophy demanding government policies that reduce budget deficits during unfavorable economic conditions. I can only imagine what austerity has done to our Mediterranean brethren, particularly in Greece and Spain.

Here in the United States, austerity arrived in the form of “budget sequestration,” a procedure that limits the size of the federal budget by inflexibly capping government spending. The current sequester is stupid. I mean that literally. The sequester was designed to be stupid — budget cuts so foolish that no one would dare allow them to happen. Yet we have. Now, faced with their failure, both Congress and the President’s administration are doubling down — Congress pretending that mindless, unguided budget cutting is good governance, and the President and his cabinet, having “cried wolf,” now making the impacts of the cuts as severe as possible with service reductions that seem more emotional than rational. Meanwhile, in the agencies where many *Wildfire* readers work, hardworking men and women must carry out their mission, keep the organization pointed in a positive direction, stay true to their core values and serve the people they lead.

Leading well in an austere environment can seem daunting, particularly when budget cuts seem so impactful, but simultaneously cynical, ineffective and pointless. So, how does one lead in the time of stupid? For wildland fire organizations, I have five suggestions.

Focus. Budget sequestration and spending policy lay outside the influence of many *Wildfire* readers. Do not spend your attention or energy, or allow your people to spend their attention and energy, on factors beyond your or their control. Doing so wastes time, distracts people from what is important and drags down morale. Whether you are responsible for two people or 2,000, focus on that part of organization for which you have stewardship. Keep your people

safe; there’s nothing out there worth dying over. Get people together and revisit your mission, vision and core values, and refocus them. Separate the essential from the more expendable, concentrate on the mission-critical and innovate in order to achieve those mission-critical accomplishments. It is precisely in times like these when elements of a solid strategy prove invaluable as guideposts.

Understand people’s state of mind, show compassion and support them. Uncertain times are emotional times; so remember that leadership is personal. Effective leaders make an effort to understand the needs of their employees and how employees view their work, the connection between their work and their lives, their tolerance for the circumstances, their will to follow and the stress they are under. People always value interaction and communication with their leaders, and this proves particularly true in chaotic times. People want to know that their leaders remain committed, care about the people in the organization, value their

Frankly, it is pretty easy to lead when everything is going well; it is during times like these that leadership really matters.

employees’ expertise and feedback, and will make sincere efforts to both build and maintain meaningful relationships with those they lead.

Be transparent and communicate. Many *Wildfire* readers will necessarily make big decisions about organizational changes, many of which will directly affect people. Remember, your employees are aware of the situation, they know things are happening and they are anxious. In the absence of information, people fill in the blanks, often incorrectly. In this situation, effective leaders will maintain transparency with their workforce about the nature of the budget situation, their intent for addressing the situation, the rationale for their intent, and how their intended plans may directly impact the people they lead.

Build and maintain trust. By focusing on what is important, understanding people, showing them compassion and support, communicating and being transparent, leaders

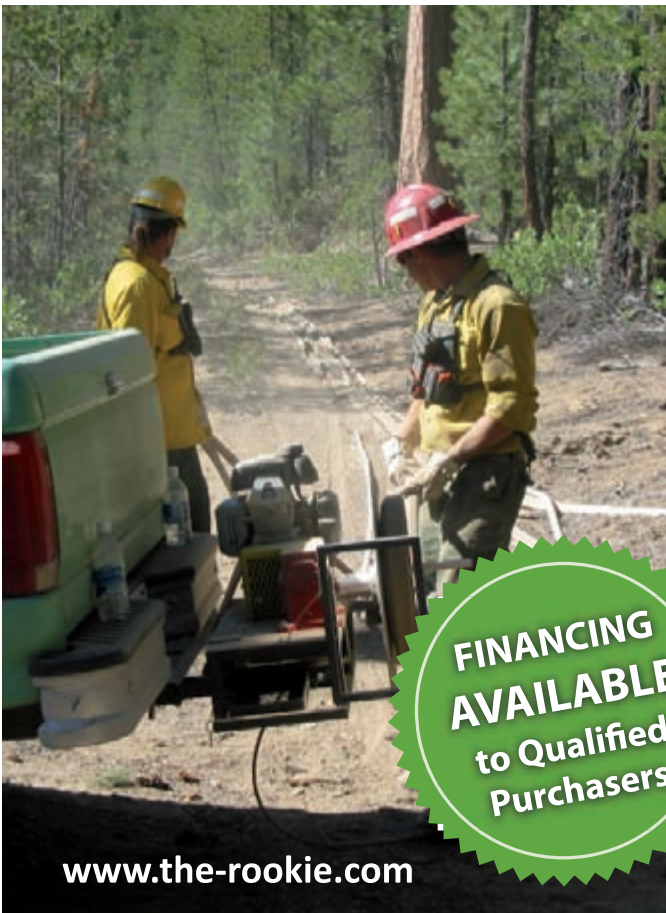
demonstrate character and build trust. Study after study has shown that trust may represent the single biggest predictor of both effective leadership and employee satisfaction. We know that people find it much easier to trust a leader who treats them individually, shows them compassion and takes an interest in them as individuals.

Remain keenly aware of your emotional and social impact. I have observed that most people in assigned leadership roles grossly underestimate the influence they have on other people and the climate of the organization. After all, regardless of what level we have achieved in our career, we still feel like the same person inside. However, the reality is that when you are the crew boss, chief, program manager or fire management officer, people are watching your every move, taking their cues from your behavior. Effective leaders maintain an intense awareness of themselves, their behaviors, how people interpret their behavior, and how the leader affects the attitudes, values and beliefs of those they lead. Create a climate in which people see how they may adapt, show their resilience and see the path forward.

Painful as it may be, the reality is that some in Congress will continue to pretend that mindless, unguided budget

cutting represents good governance. The President's cabinet will continue to engineer cynical service reductions to prove their point. In the meantime, hardworking *Wildfire* readers must continue to carry out their mission, keep their organization pointed in a positive direction, stay true to their core values, and simultaneously serve both the taxpayers and the people they lead. Frankly, it is easy to lead when everything is going well; it is during times like these that leadership really matters. So in the absence of effective leadership at the top, how does a fire service leader lead in the time of stupid?

To be effective, I believe that, first and foremost, a leader in the wildland fire service must focus on the part of organization he or she holds and on keeping people safe. Then, he or she must strive to understand people's state of mind, show compassion, support people, lead with transparency, communicate, build and maintain trust, and stay keenly aware of his or her influence and impact on people and the organization's climate. Since we are in the opening rounds of what will undoubtedly be a serious fire season, I encourage my friends and colleagues to keep their people safe, keep it positive and, when it comes to the sequester, remember that this too shall pass. **W**



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Framing Our Fire Story

to Promote Sustainable Policies and Practices

For the 2012 fire season, a USFS fire ban directive raised concerns that a return to a “suppression”-only response to fire would undermine long-term fire management strategies and policies. Bob Mutch responds with a 40-year retrospective and a call for communicating our fire expertise.

By Bob W. Mutch

“If Americans had a National Register of Historic Places for fire, the Selway-Bitterroot region would rank among the early entries.”

—Steve Pyne, “Fire Call of the Wild,” 2012

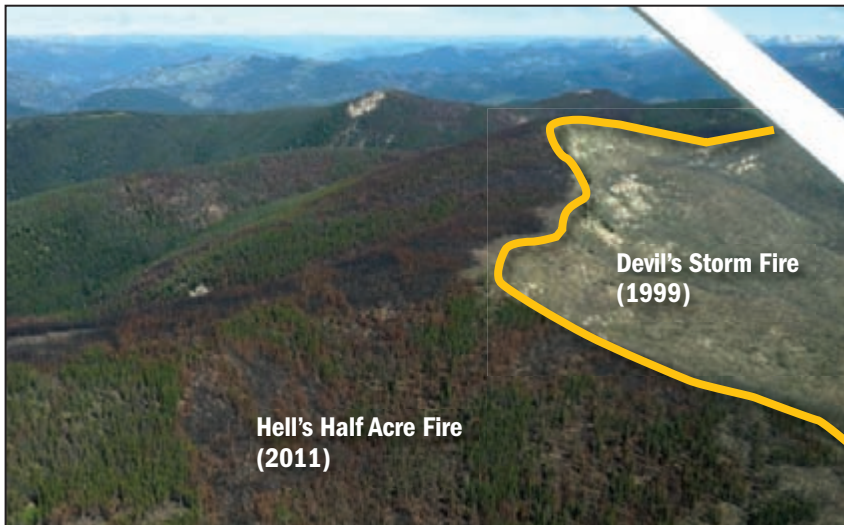
Steve Pyne penned these words following a July 2, 2012, flight over the Selway-Bitterroot Wilderness (SBW) hosted by West Fork Ranger Dave Campbell. The flight celebrated 40 years of free-burning fires in the Selway Country, following approval of the White Cap Plan in 1972 by Forest Service Chief John McGuire. Steve was referring to the trajectory of fires in the SBW from

the 1910 “big blow-up” to the massive Pete King Fire of 1934 to the recent four decades of free-burning fires.

Despite the historical significance of this “fire place,” the Forest Service’s Washington Office chose to commemorate the auspicious occasion of the 40th Anniversary with a Fire ban disseminated to Regional Foresters in a letter dated May 25, 2012. Due to budget issues, suppression costs and firefighter exposure, the May 25 letter emphasized initial attack as the standard operational procedure. Accompanying the Fire ban was the statement: “We acknowledge, and emphasize, that such an approach is not sustainable over the long run. It would contribute to deterioration of ecosystem health and the vulnerability of communities to catastrophic wildfire.”

So why even go there? The ban was an attempt to extinguish the very spark that keeps the momentum of the Selway Country ecosystems alive, well and healthy, while reducing firefighter exposure and reducing costs.

Day One, Williams Fire. Angeles NF, Calif. Wildfire Photo Finalist by Felix Valle.



The eastward spread of the 2011 Hell's Half Acre Fire is halted by the 1999 Devil's Storm Fire on the right.

It actually contradicted the state of fire ecology knowledge and more than 50 years of fire science research, leaving agency personnel with the feeling that they had been returned to a known, flawed, historic “10 a.m.” policy of suppressing all fires, at any cost. Adding to this confusion, after hearing of the content of the May 25 letter, members of the public asked, “If this is not sustainable over the long run, why are we doing it?” The irony of the fire ban is that it actually increased suppression costs and increased firefighter exposure in large western wilderness areas such as the Bob Marshall and the SBW where past fires regulate the size and severity of new fires.

Prior to the July 2 flight over the Selway-Bitterroot Wilderness, Campbell briefed the two passengers from a map that looked as though it had freckles. The freckles were the extensive distribution of past fire perimeters that had accumulated over 40 years of positive wilderness fire decisions. Campbell, himself, has made 260 decisions to allow lightning fires to burn freely in the SBW during his tenure on the West Fork Ranger District. All of those fires produced meaningful wilderness benefits while reducing costs and firefighter risks.

The historical fires witnessed during the July flight were represented by every size, shape and description as they burned under a multitude of

fire weather and fire behavior conditions. What we saw unfolding below us on this flight back through time was the repeated scenario of a recent fire being regulated in terms of size, spread and intensity by earlier fires. In other words, so many fires have been allowed to burn in the Selway Country over the years that a self-regulating system has emerged—a system whereby the health of these ecosystems is more within the range of historical variability rather than far outside it. Allowing the continuance of such fires substantially reduces firefighter exposure and costs, both now and in the future.

A THESIS FOR ENHANCED FUTURE COMMUNICATIONS

Let there be no mistake about the intent of the May 25 letter to all Forest Service Regions. It was perceived by people in the field as a fire ban and its direction was implemented in a manner that emphasized aggressive initial attack. For example, then Intermountain Regional Forester Harv Forsgren issued a letter one week later to his National Forest Supervisors underscoring the fact, “Our default response will be to aggressively initial attack all wildfires where safe to do so, including those in Wilderness areas.”

In an AP article (8-18-12), Susan Montoya Bryan reported: “This season is different. Now firefighters are trekking deep into the Gila National

Forest with trains of equipment-carrying horses and one overriding goal: snuffing out all fires, no matter how small or remote.” She went on to say, “Across the West, only one fire — deep in the Teton Wilderness in Wyoming — is being allowed to burn (for resource benefit).”

Countering the fire ban could easily fall into the trap of pointing fingers at high level officials and asking, “How could you?” But a far more productive response places each of us in fire science, fire management and resource management squarely in the limelight as those who have responsibility to ensure more sustainable fire policies in the future. Consider how the following thesis might place us in a more proactive communication role in the future:

We, the fire community, have failed to tell our story in a manner that policy makers get it, resulting in the recent enactment of unsustainable fire policies that produce catastrophic outcomes in fire-adapted ecosystems.

If we want to avoid a repeat of the 2012 fire ban, we need to step forward, individually and collectively, to better frame our story so that policy makers, politicians and the public develop, implement and support sustainable fire management policies and programs. Pyne framed our story many years ago when he said that we have too much of the wrong kind of fire and not enough of the right kind of fire: in other words, too much wild-fire and not enough prescribed fire. Professor Emeritus Harold Biswell of UC-Berkeley weighed in on this same topic years ago when he chided agencies for not having a balanced fire management program. He had a “rule of thirds” that suggested that agencies invest a third of their fire budget in fire prevention, a third in prescribed fire and a third in fire suppression. One could debate his proportions based on local conditions, but one cannot argue with the importance of a balanced fire management program.

In the September/October 2012 issue of *Wildfire*, Ron Steffens provided some useful insights on how we might better “frame” our story for

Communications

improved understanding by the public. In addition to the public audience, we need to add the policy makers and politicians who have a key role to play. Ron cited principles to better framing that include the need to engage in public dialogue; to act openly, ethically and apolitically; and to use terms that resonate to frame the discussion. He went on to explain the basic tenets of framing: first, how do we get people to think about our issues, and, secondly, how do we get people to think in such a way they want to solve our issues through public policies?

How can we frame the earlier thesis in a manner that provides a positive incentive for all of us to communicate more productively in the future? Such framing might look like this:

We, the fire community, need to tell our story so convincingly that policy makers, politicians and the public develop and support fire management policies that produce a balanced program,

sustaining the health of fire-adapted ecosystems while reducing suppression costs and risks to firefighters.

The need to fulfill our responsibility in framing a more clearly understood, compelling and receptive story that will build and maintain trust in our land management is an urgent one. In the same September-October issue of *Wildfire*, IAWF President Dan Bailey sounded the alarm, an alarm that is emphasized by the onslaught of mega-fires almost every fire season. "It is time to make wildland fire policies work..." Bailey said, or see the status quo "... continue to result in larger, more deadly, and more costly wildfires."

In the need to better frame our story, it is important to remember that at times we can be our own worst enemy. For example, a May 2007 workshop at the Lubrecht Forest in Montana presented the message that wildland fire use is the riskiest type of fire one will ever manage. As true as

that statement is at the outset of a program that allows long-duration fires to burn freely amidst uncertain future weather conditions, this high-risk message becomes less and less relevant as the program matures.

The agency's current emphasis on risk management is conditioning decision makers to the fact that risk implies a negative situation. We must approach risk from wildland fires correctly. It should not automatically project a negative perception, but should be a welcome addition to the information that aids decision making. New tools and technologies now afford managers greater risk assessment and long-term management planning capability than ever before, placing us in a favorable situation to better manage fires.

Finally, as in the case of the SBW, 40 years of free-burning fires have produced the positive situation where fires become self-regulating and low-risk events. That outcome needs to be

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better communicated to policy makers to allay fears that we may have helped instill in them by our static framing of an emerging wildland fire use program as inherently risky.

FIRE BEHAVIOR EXPERIENCE AND SCIENCE HELP FRAME OUR STORY

Phil Omi (2005) reported that scientists had speculated for years that natural fires might become self-regulating as burned areas created buffers that would regulate the size and severity of future fires. Also, for years close observers of the SBW fire program experienced a similar gut reaction that past fires were accruing positive interest in the future's fire ledger. Simply stated: Past fires were regulating the size and intensity of future fires without human intervention. Teske et al. (2012) gave scientific credence to this gut reaction in their analysis of fire-on-fire interactions in the Bob Marshall Wilderness, Selway-Bitterroot Wilderness and the Frank Church-River of No Return Wilderness. They reported evidence from remote sensing that large fires generally inhibit the spread of subsequent fires, while small fires appear to have little impact on the spread of other fires.

Byron Bonney framed a SBW Success Story for the Western Region of the National Cohesive Strategy (2012). He indicated that the most important contributions to the success of the SBW program are threefold: (1) allowing fire

to return to the wilderness ecosystem to accomplish the restoration and maintenance of resilient landscapes on a much larger scale, (2) contributing to and increasing the safety of firefighting resources by reducing exposure, and (3) reducing, over the past 40 years, the size and intensity of future fires, producing a self-regulating ecosystem where new fires burn into older fire areas.

The numerous fire behavior and fuel workshops at the 4th Fire Behavior and Fuel Conference in Raleigh, N.C., in February 2013 attested to the fact that we know a lot about the fire environment of the ecosystems we manage. We have a depth of science to draw upon as we frame our fire story. I am reminded of one Forest Service intern from Florida who attended the Raleigh conference. He clearly understood his responsibility to tell his prescribed fire "success story" and promised to make it available in the near future. The rest of us need to follow his good example.

HOW TO FRAME A BETTER FIRE FUTURE

First, the Forest Service Washington Office needs to conduct an After Action Review of the fire ban and share the Lessons Learned widely with all partners. Second, management practitioners and fire researchers must become more active in framing the fire story so that policy makers allow enough fires of the "right kind." Third, heed the call of IAWF President Dan Bailey for an outside review of sustainable fire policy issues (similar to the review that followed the Yellowstone fires of 1988). Finally, return to the strength of interagency partnerships as we frame our story and implement balanced fire management policies.

If we do not rise to the challenge of telling our story more clearly, others will tell our story for us — and we will deserve what we get. For example, author Michael Kodas said in an onearth website essay (Aug. 30, 2012): "... the agency is quickly responding to almost every blaze in an attempt to keep small fires from raging out of control. That's despite the long-term harm to forest ecosystems and the likelihood that the new policy could prime forests for even more destructive fires in the future."

We find ourselves in the enviable position to contribute our own stories — to document our fire experiences and science in a manner that produces credible fire policies and sound practices for a more sustainable resource management legacy. **W**

Editor's Note: With 60 years of experience in fire management, Bob Mutch offered his insights on fire history and policy at IAWF's 4th Fire Behavior and Fuels Conference in Raleigh, N.C. At the close of the conference, US Forest Service Chief Tom Tidwell announced that the 2012 "fire ban" letter was rescinded and a new directive affirming a range of fire responses was issued for the 2013 fire season.

For a list of references and links to key documents, see <http://wildfireworld.org/article/framing-our-fire-story/>.



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Stalled Air Tankers

For this fire season and beyond, we need to resolve to change our air tanker policies.

By Walt Darran



With a late-season October fire climbing the hill, crews pull back to await the retardant drop. Sawtooth NF, Idaho.

As we enter the 2013 fire season, those concerned with the state of the U.S. federal air tanker program might wish to read an article in *Aviation Week & Space Technology* (Feb. 4, 2013) on the state of the air tanker industry. Titled “Air Tanker Angst,” the authors warn, “The U.S. will be facing yet another fire season with a dwindling number of aging air tankers.”

What seems to some to be unfocused (some might even say chaotic) management at USFS Fire & Aviation appears to others to be a tightly focused

obsession to award Lockheed-Martin a \$2-3 billion contract for a C130J fleet at all costs, without a civilian MAFFS/RADS Retardant Delivery System even being available to support that fleet.

While that may prove to be a worthwhile and affordable goal at some point down the road, the commercial aerial wildfire suppression industry stands ready *today* to upgrade and supplement the current and proposed VLAT, LAT, scooper, SEAT and Next-Gen fleets to protect lives and property in the interim. *If*— given reasonable,

logical, user-friendly RFPs, and timely contract awards by USFS, instead of fiddling while Rome (Georgia?) burns.

The Department of Defense (DOD) has rejected the “Smokey Buys ‘em, Air Force Flies ‘em” kite (DoD MAFFS-C130J Feb 2011). And the RAND Corporation, in its \$800,000 study commissioned by USFS (RAND final 2012), suggested an entirely different fleet mix from what USFS wanted; their recommendations have apparently been dismissed out of hand.

Because Smokey won’t make timely decisions, aerial firefighters are in limbo. One instance of bureaucratic paralysis: after FAA approval and IAB carding, the Evergreen B747 VLAT was not called out *once* by USFS during a two-year CWN agreement. It was used by Israel, Mexico and Cal Fire, but not by USFS, even when (reportedly) requested by incident commanders and lead planes. And now, while fire & aviation ponders one more half-million-dollar study, we enter the 2013 fire season with no national LAT/VLAT/scooper contracts in place.

For this season and beyond, we need to face the issues, resolve to change and enact a few key decisions.

Call When Needed: The whole issue of CWN agreements for multi-million dollar operations needs to be revisited. How can any reasonable person expect a contractor to maintain safety, effectiveness and efficiency with a first-response team without at least covering basic upfront costs, plus a reasonable retainer? Seal Team 6 on CWN? There is no free lunch.

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Sequestration & Budgets: Granted, sequestration and other budgetary restrictions aren't making things any easier, but a proactive plan in face of budget constraints is what we require of our fire and fire aviation leadership as well as concerned politicians. And they have yet to address a core finding of the Blue Ribbon Panel back in 2002: "Possibly the single largest challenge now facing leaders of these federal agencies is to foster cooperation and collaboration among working-level staffs, contractors and states to raise the standards of aerial wildland firefighting in the United States."

The Air Tanker Crossroads: The air tanker industry is at a crossroads, moving from military and airline surplus piston-engine aircraft costing around \$100,000 each to relatively new turbine aircraft costing anywhere from \$10 million-100 million each. Contractors need solid, reasonable, negotiated

Granted, sequestration and other budgetary restrictions aren't making things any easier, but a pro-active plan in face of budget constraints is what we require of our fire and fire aviation leadership as well as concerned politicians.

guidelines and long-range (10 years or greater) contracts from USFS so they can extrapolate their business plans and financing to service the wildfire needs of the country in a new era.

Indecision or Mis-Decision? For whatever reason, top management at USFS seems totally focused on promoting a fleet of new Lockheed-Martin C130J aircraft, delaying or blocking exclusive-use contracts on alternatives that don't precisely meet the "300 knots, 3,000 gallons, turbine powered, period" mantra (the Beriev

Be-200 carries 63 gallons too little, the DC-10 too much). This leaves contractors and their employees, the needs of aerial firefighters and the public they serve twisting in the wind.

Perhaps they are following the dictum of that sage air tanker pilot, Walter P. Johnson: "The key to flexibility is indecision." **W**



Walt Darran is a Wildfire Magazine Contributing Editor and Safety Committee Chairman on the Board of Directors of Associated Aerial Firefighters (www.airtanker.org).

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Flying Boats of the High Deserts of Idaho

The CL-215 Air Tankers on the
Minidoka Complex Fires of 2012

By Rich McCrea

As the United States faces new approaches and decisions regarding fire aviation, *Wildfire* offers a reflection on integrating a new aviation tool into operations by the managers who put the tool to work.

This article was compiled from interviews and information submitted by firefighters assigned to the Minidoka Complex in south-central Idaho in 2012. Their names and positions on the fire were: Tony Duprey, Air Support, CL 215 Manager; Hugh Carson, Air Operations Branch Director (AOBD); John Kennedy, Operations Branch Director (OPBD) and Ben Oakleaf, Division Supervisor (DIVS).

The Minidoka Complex of fires were started in August 2012 in southeastern Idaho, by a series of lightning strikes. The Minidoka Complex consisted of four fires: three on the Sawtooth National Forest and one on the Bureau of Land Management (BLM) Twin Falls District. These four fires burned a total of 98,000 acres of forest and rangeland, and threatened nearby homes, farms, ranches and critical sage grouse habitat. The fire operations proved challenging due to the extreme fire behavior and

A CL-215 "Super Scooper" takes off from a desert lake on the Minidoka Complex, Idaho.

rugged terrain. One overnight run spread the fire nearly 10 miles west toward farms and the main access road to a popular recreation area.

Two CL-215 air tankers, water scoopers, were deployed on this complex. The CL-215s were owned by Aero Flite Inc. of Kingman, Ariz., and contracted to the U.S. Department of Interior. The Canadair CL-215 was the first model in a series of firefighting "flying boat" amphibious aircraft built by Canadair and later Bombardier. The CL-215 is a twin-engine aircraft with a high wing configuration, designed to operate well at low speeds in gusty wind conditions. It's also able to take off and land on unpaved airstrips.

Carson, Kennedy and Oakleaf were assigned to Lunds Type 1 Incident Management Team (IMT).

Duprey was the Agency Manager with the CL-215s. He works for the Chumash Tribal Fire Department and was selected as manager and day-to-day contract inspector for the contract period with the CL-215s due, as Duprey explained, to his previous experience working with scoopers both as an Air Tactical Group Supervisor (ATGS) and as a manager and contract inspector.

How did the CL-215s end up on the Minidoka Complex?

Carson, AOB: I was aware of two CL-215s in Montana that were not being fully utilized. After some delay, they were transferred to the Minidoka Complex. Air support was a critical need. Widespread fire activity made the availability of any type of aircraft questionable.

Were the CL-215s contracted aircraft? How many aircraft were there, and what are their advantages?

Duprey, CL-215 Manager: Two CL-215s were used, as well as Aero-Flite Inc.'s Scooper 262 and Scooper 264. The scoopers were attached to the Minidoka complex from 8/11/12 until 8/15/12. They were utilized on the incident on 8/11 and 8/12 — making a total of 65 drops or 91,000 gallons of water on the fire in 1.5 days.

Where were the Water Scoopers based at in Idaho?

Duprey, CL-215 Manager: For the Minidoka Complex, Scoopers 262 and 264 were based at Pocatello Regional Airport (KPIH). Pocatello was selected due mainly to three factors: the scoopers had operated there before; scoopable water, American Falls Reservoir, is within four miles of the airport enhancing initial attack capabilities; and selecting Pocatello ensured that the Twin Falls Tanker Base retardant operation supporting the Minidoka Complex would not be impacted by the scooper operation. Although the BLM tanker base at Pocatello provided logistical, briefing and dispatching support for the scoopers, the scoopers were parked on the general aviation ramp adjacent to the tanker base ramp.



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Were the CL-215s used for initial attack?

Duprey, CL-215 Manager: On 8/13, one scooper was dispatched to a local initial attack fire from Pocatello and on the climb out, after scooping at American Falls Reservoir, spotted a grass fire approaching a home. After a

call to the Air Tactical Group Supervisor for permission to drop on the emerging fire, the scooper dropped and, according to local fire authorities, "saved the structure." This is an example of why locating scoopers near a water source is so important for initial attack capabilities.

Were there any issues with the use of local water sources by the CL-215s?

Carson, AOB: One of the reasons that the CL 215s were so successful on the Minidoka is that the local fire and aviation management staff had done their homework by educating the line managers on the Sawtooth National Forest in the safe use of the aircraft. A pre-attack plan with key information about local lakes and reservoirs was extremely helpful. Another reason is close coordination with local authorities, in this case the mayor of Oakville, Idaho, and two water masters.

After my experience at Minidoka, I became an advocate of the government not going through an approval process for potential bodies of water.

Where did the CL-215s scoop water from, and how many loads were delivered?

Duprey, CL-215 Manager: For the Minidoka Complex, the CL-215s scooped out of Lower Goose Valley Reservoir (40 loads), Lake Murtaugh (22 loads), Lake Walcot (one load) and American Falls Reservoir (two loads). For local initial attack, the CL-215s scooped out of American Falls Reservoir (four loads). The CL-215 pilots are Initial Attack Carded by the BLM and therefore did not require a lead plane. If a lead plane is on-scene working with the retardant aircraft, the scoopers will either be cycled to the lead by the ATGS or assigned a separate area to work on the fire under direct control of the ATGS.

Carson, AOB: The CL-215 has a 1,400-gallon capacity.

How were the CL-215s used tactically on the fireline?

Kennedy, OPBD: This complex challenged our IMT in many ways. There was a significant drawdown of national resources, including ground and aviation assets. The fire behavior was extreme with historic ERC values, terrain-influenced winds, very mixed fuel models and values at risk. There was significant competition for aviation resources geographically,



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Aviation Operations

due to other large fires. It was a game changer once the CL-215s arrived. Our ground resources were having difficulty securing the S/W side of the fire. This was a critical side of the fire with a direct threat to ranches, residential structures, agricultural holdings and sage grouse habitat.

Once we located and approved scoop sites, we daisy-chained the scoopers with load and return times 10 to 15 minutes. Their target acquisition was spot-on and communication to our ground resources remarkable. I was impressed with the accuracy of their drops and the forward thinking of the pilots understanding the tactical objectives. We were able to secure the SW side fire with great success. I've worked with scoopers before but never with this complexity of terrain and fire behavior. From an Operations standpoint, I feel that the CL-215s are an asset to an incident if, logistically, there is a water source close by.

Oakleaf, DIVS: The Division I was responsible for [on the Minidoka Fire] 15 miles of line on the western edge of the fire. The CL-215s were an enormous asset on this fire. Air resources were hard to come by, and use of the scoopers

“The CL-215s were an enormous asset on this fire. Air resources were hard to come by, and use of the scoopers finally gave us the opportunity to grab some line and start going direct in tough terrain.”

—Ben Oakleaf, Division Supervisor

finally gave us the opportunity to grab some line and start going direct in tough terrain. They were also a huge asset in the execution of a 12-mile burn. The CL-215s helped eliminate holding concerns and slowed the main fire spread so we could stay in front of it with the lighters.

The use of the CL-215s in terrain was no issue. They maneuvered and dropped any place we needed them, and there was no difference in their drop capability compared to a tanker. The turnaround time of the scoopers made them even more effective than retardant or heavy helicopters because they were able to deliver so much water in short periods of time. I think the CL-215s are a great aerial resource that should be used more often in the Intermountain West.

The CL-215 air tankers proved to be a valuable asset on the Minidoka Complex. The water scoopers proved to be versatile air tankers, with their ability to come in low and slow, and deliver water to the firefighters where it was needed. The quick turnaround times made them even more effective and cost-efficient. **W**

Rich McCrea works as a wildland fire management consultant. Outfitted with a BS in Forestry, he started his career as a seasonal employee with the Forest Service, and then moved on to permanent positions with the Bureau of Indian Affairs as a Fire Management Officer. In 2008 Rich retired from the federal government after a 32-year career in fire.

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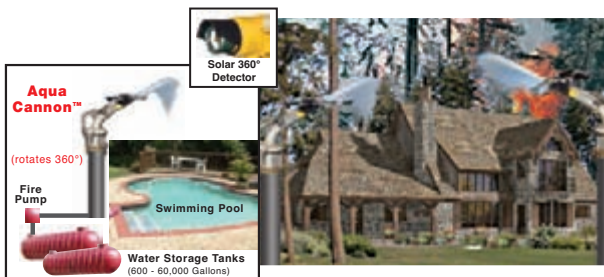
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Lessons from Alberta

Facing high values at risk in a complex fire regime, the Province of Alberta's airtanker and aviation program offers one model for strategic aviation planning. Facing some 1,400 fires that burn 598,000 acres (242,000 hectares) in a typical Alberta fire season, the key to their aviation planning and response involves a diverse fleet built through a dedicated service-contract relationship between the aircraft industry and government.

A unique combination of factors contributed to the program's development and evolution, beginning with a need for a set of clear initial attack objectives designed to best protect Alberta's large expanse of values at risk in a complex fire regime. Alberta structured its initial attack strategy around meeting and measuring these objectives in a performance management approach to doing business.

For an in-depth review of Alberta's fire aviation program by Kat Sonia Thomson, visit www.wildfireworld.org/article/alberta-aviation/.

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“Firefighter Behavioral Health” Roll-Out:

Make Order Out of Chaos



Kathy Clay, fire marshal/battalion chief with Jackson Hole (Wyo.) Fire/EMS and a new IAWF board member, bridges the structural fire, wildland fire and emergency medical communities. *By Kathy Clay*



The more we work firelines and incidents together, the more we'll be able to sense when to "check in" and offer "Stress First Aid," firefighter-to-firefighter.

Having recently written the critical incident management guideline for our fire/EMS combination department, it was my fortune to attend the National Fallen Firefighter Foundation (NFFF) roll out of Initiative 13 on firefighter behavioral health, held in Baltimore, Md., on March 1-2.

Representing the International Association of Wildland Fire as a new board member, my goal was to figure out how to weave the wildland firefighter into what I imagined was going to be a predominately structural firefighter conversation. Finishing a long day of travel, I jumped on the airport shuttle and struck up a conversation with a gal who joined me curbside.

Our chat revealed the thread I was seeking — she was Kim Lightley, the NFFF's Wildland Advocate, also attending the conference. She spoke of her home near Bend, Ore., her work with a pharmaceutical company, and then she quietly mentioned she was the only woman survivor of the Storm King Mountain Fire in 2004. I sat in stunned silence. Having studied this fire, I was in complete awe and understood the significance of her revelation.

• • •

Tasked by NFFF in 2009 with the work to fulfill the mission of Initiative 13 — *Firefighters and their families must have access to counseling and psychological support* — a team of behavioral health specialists worked toward a simple and effective management tool to help firefighters and emergency responders with managing the stress of their work. Combining an evidence-based process with a research-based approach, the team concluded that the popular critical incident debriefing model was often doing more harm than good. The research of Dr. Richard Gist, Vickie Taylor and Dr. Patricia Watson leads to a remarkably simple and incredibly effective management response to stress. It begins with creating calm and order out of chaos. It begins with effective incident command.

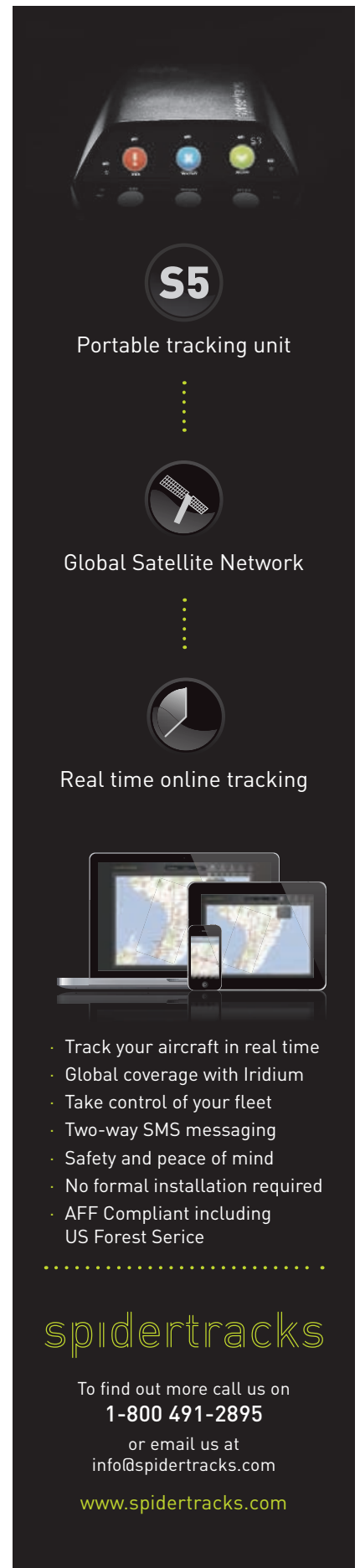
I had not expected this revelation.

Yet, upon contemplation and the recognition of the research findings, it makes sense that good ICS does make perfect sense. Studies show incidents that are managed using the ICS system have far fewer stress injuries afterward. Responders are less stressed and therefore suffer less stress throughout and beyond the time of the incident. Preventing chaos and promoting the restoration of calm can dramatically decrease the need for higher-order mental interventions in the future.

As with so many skills, ICS should be incorporated into every “incident,” from training to a dumpster fire to a larger event. In the fire house, at the vehicle rollover, on a family vacation — use your imagination. With ICS, everyone knows their job and boss, and accountability is reflected within the organizational chart.

Simple step Number Two is to commit passionately to what many of us already do, especially in the wildland arena: commit to after action reviews (AARs) each time, every time. This labor of repetition develops responders' practice and commitment to understanding the rules and the purpose of the AAR. What happened? What did we do well? What could we improve next time? Consider AAR the “time out” for the incident, allowing for those involved a review, time of reflection and a chance to put the pieces together. And finally, who needs to know or how do we communicate this message to members to enhance organizational learning? The use of AAR provides responders with the ability to make sense out of the incident that just happened and the opportunity to project lessons learned out to the organization.

The next take-home point of the two-day session highlighted what some of us do pretty darn well already — taking care of our own. The Stress First Aid peer-modeled tool focuses on paying attention. Sounds simple, right? It means, folks, you need to know your people. You know what is going on in their lives. You have to care, you have to pay attention, you have to listen. Your people are not just beings who show up



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Firefighter Health

and pull a shift with you or arrive at the firehouse from home or work when the tones drop. You develop a sense of when things are not right and you check in with these folks. We do this best, firefighter to firefighter or EMT to EMT — i.e., like understands like.

Checking in may mean showing up at a buddy's house to help build the deck he's been working on, or going for a hike together, or just simply being together. If there is trouble and you recognize the signs, you will probably hear about the trouble by being patient and respectful. You will know how to "check in" because you will have spent the time listening to and knowing this person. Your being there for them may be all that is needed.

Some firefighters, admittedly, will need more than peer care. In order to determine the level of appropriate care, we were taught advantages of the new model for potentially traumatic events and the accompanying Trauma Screen-

ing Questionnaire, an effective method to determine the need for advanced intervention. When given to responders exposed to potentially traumatic events, the TSQ tool will help identify whether or not additional help should be activated. If a score of six or more questions are answered yes, referral to a behavioral health practitioner is indicated.

• • •

Lightley has been very involved in helping the NFFF translate some of the new behavioral work for the wildland community. Her wildfire experience, years of post traumatic stress and her road to recovery inspire us all in the necessity and value of taking care of our own. With her special outreach prowess, Lightley is a great resource to the NFFF and will be an outstanding advocate in spreading the work of Initiative 13.

As we prepared to board our planes, I hugged this woman, 10 years my junior, who has endured suffering un-

known to me. She stands tall and strong to tell the world her story, to spread the taking-care-of-your-own message. She sees and has accepted her destiny — determined that fateful day atop a mountain of raging fire, that fire which spared her life. She is with us today, ready to help us support those we work with, side by side in a world of fire and death and sadness.

As we journey home, every one of us returns, pulling a thread. Weaving it into our own cultures, shaping that fabric into well-run incidents, punctuated with practiced AARs, and followed up with sincere concern for those with whom we worked, those whom we love. We can only hope to stand as tall, as brave, as committed and focused as the Prineville Hotshot who is ready to tell her story and inspire those of us she has touched. **W**

Visit www.wildfireworld.org/article/order-out-of-chaos/ to access the Initiative 13 tools.

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Burning toward Uncertainty

By Wesley Page

As a young fire researcher, I was glad to hear that the theme of the 4th Fire Behavior and Fuels Conference was “At the Crossroads: Looking Towards the Future in a Changing Environment.” Time and again we hear bleak predictions for the future, so it was welcome relief to listen to the international wildland fire community offer ideas on positively influencing the future.

It’s no surprise to the fire community — in the last 10 to 15 years we have seen unprecedented fire seasons, particularly in Australia, North America, Europe and Russia. Wildfires regularly threaten lives and communities and fire suppression expenditures take an ever-increasing chunk out of land management agency budgets. Complicated scenarios of increased fire season length coupled with drought and declining forest health suggest we are going to continue to see longer and more costly fire seasons. The good news is that we have the ability to manage wildfires to minimize many of the negative direct and indirect effects.

At the conference, I interviewed two researchers, Dr. Miguel Cruz from Australia and Dr. John Bailey from Oregon, and two managers, Dave Finn from Alberta and Gary Curcio from North Carolina. What I discovered emphasizes the need for applied research, enlightened management and torchbearers.

APPLIED RESEARCH

I consistently heard the argument that the previous 25 years has produced a considerable body of knowledge on which to base current and future management actions. It’s clear that the lack of fire and a warming climate in fire-prone regions of North America and Australia have contributed to conditions that increasingly put firefighters and communities at risk. As Dr. Bailey



PHOTO: JEFF SHELTON

described to me, in much of the dry forests of the western United States, we have ample scientific evidence to support implementing large-scale projects using prescribed fire, natural fire or mechanical thinning to reduce the negative impacts associated with unplanned fire events. The major problem we face now: implementation.

ENLIGHTENED MANAGEMENT

A combination of outdated laws and policies coupled with cultural barriers are hindering the ability of fire managers to implement large scale projects. The good news is that it appears, at least in sections of North America, that we are making progress toward our long-term goal of building and living in fire-adapted landscapes and communities.

That isn’t to say we haven’t dealt with considerable setbacks, as noted by keynoter Bob Mutch who pointed out the pitfalls associated with last summer’s temporary policy of not allowing fires to be managed for resource benefit. From my conversations with Dave and Gary, it appears that the level of success experienced by fire managers is dependent on the specific location. In some management jurisdictions such as the R11 Forest Management Unit in west-central Alberta, Canada, the deliberate reintroduction of fire in a formal management context has only recently begun. In other cases, there has been a relatively

long history of successful implementation of prescribed fire, especially in the Southeast United States, which was aptly described by Steven Miller in his plenary presentation. However, in most cases it seems we are falling far short of the area that needs to be treated in order to have a significant impact on reducing wildfire extent.

TORCHBEARERS NEEDED

It’s clear — to deal with current and future challenges we must recognize the weaknesses of past approaches and quickly adapt our strategies to address the new issues. Steve Miller noted that those of us directly involved in wildland fire management and research must be the torchbearers and continue to advocate for policies that expand the use of fire on the landscape. Those of us beginning our careers must both be willing to carry on the successful traditions of the past and not be afraid to make the necessary changes to face the future. Only through collaborative projects and highly adaptive organizations can we overcome and address the uncertainties associated with tomorrow’s fires. **W**



Wesley Page, a Ph.D. candidate in Forestry at Utah State University, has worked nine seasons on hotshot and engine crews and three years as a fire management specialist for the U.S. Forest Service.



Photo courtesy of FEMA.

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