

APRIL-JUNE 2020 / VOL 29.2

UNITING OUR GLOBAL WILDFIRE COMMUNITY

WILDFIRE

An official publication of the **International Association of Wildland Fire**



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FIRE and the PANDEMIC

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Ron Steffens - Executive Editor
 editor@wildfiremagazine.org

Marjie Brown - Managing Editor
 wildfirewriter@gmail.com

BUSINESS

Mikel Robinson - Administration
 execdir@iawfonline.org

Kim Skufca - Advertising Associate
 kim@iawfonline.org

Century Publishing
 Post Falls, Idaho (Printing)

WILDFIRE/COMMUNICATIONS
 COMMITTEE (IAWF)

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Mariona Borràs

Celia Conde

Lucian Deaton

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WILDFIRE (ISSN: 1073-5658) is published by the International Association of Wildland Fire, a 501(c)3 nonprofit organization. The magazine supports IAWF's core mission – "Uniting the global wildland fire community."

Address: International Association of Wildland Fire,
 1418 Washburn, Missoula, MT, 59801 USA.
 (406) 625-7059 | execdir@iawfonline.org

Editorial Email: editor@wildfiremagazine.org

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Postmaster: Send address change to Mikel Robinson, Executive Director, International Association of Wildland Fire, 1418 Washburn, Missoula MT, 59801 USA.

COLUMNS & NEWS

- 4 **PRESIDENT'S DESK** Crossing our social tipping points
- 7 **BRIEFING** Fire & Pandemic
- 8 **THOUGHTS ON LEADERSHIP** Leading a multi-generational workforce
- 10 **IAWF NEWS** IJWF Outstanding Editor, Smoke conference virtual & online, Fire Ecology conference preview
- 14 **DIVERSITY** Inappropriate behavior, diversity, and inclusivity – striving for change, facilitating discussion, and creating a process to speak up

FIRE & THE COVID-19 PANDEMIC

- 20 **A NATIONAL AREA COMMAND APPROACH**
 Q&A with Joe Reinartz, Area Command Team Coordinator
- 22 **WHAT'S AHEAD (WESTERN FIRE CHIEFS) + GLOBAL SURVEY BRIEF**
 Bob Roper (for The Western Fire Chiefs Association), USA
- 25 **GLOBAL SURVEY BRIEF**
 Peter Moore, Cathelijne Stoof et al

FIRE MANAGEMENT

- 27 **COMMUNITY: UNITED KINGDOM**
 UK Firewise recognized for building a sustainable and empowered community
 Lucian Deaton
- 30 **WHEN PRESCRIBED FIRE FACES A PLAGUE OF PIGS**
 Lessons from the nexus of invasive species and fire management
 Johnny Stowe

AFTER ACTION: AUSTRALIA

- 34 **A US FIREFIGHTER'S LESSONS FROM AUSTRALIA'S BLACK SUMMER**
 Marcus Cornwell
- 38 **THAT OTHER INTERFACE** A scientist reflects on the human interface
 Hamish Clarke
- 40 **WORDS ON FIRE** A conversation on a mentoring tutorial
 Hamish Clarke & Stephen Pyne

PHOTOS

SANITIZE YOUR HANDS. (Cover, pages 3 & 22). From crowded fire camps to the remotest fires, there is a tradition in fire of fighting the spread of infectious diseases — camp crud — as demonstrated in these pre-2020 photos from fires in the US West (drawn from the archives of Kari Greer). With the pandemic spread of the novel coronavirus, the question this season is how we adapt to a more virulent spread. For instance, with social-distance guidelines, the eight firefighters crowded in the photo above should likely be three, with six-feet spacing. Photos: Kari Greer.

CROSSING OUR SOCIAL TIPPING POINTS



TODDI STEELMAN
PRESIDENT

While the Australian wildfires seem like a distant past given the crisis created by COVID-19, these fires remain unprecedented in many ways and also deserving

of our continued attention given what they signal about how the world around us is changing. Let me take you back in time and remind you what it looked like then. Images of residents fleeing to waterfronts, tourist evacuations by boat, entire habitats incinerated, smoke blanketing Sydney, blood red skies—the human and ecological toll will not be clear for months, if not years. Is this what our future holds?

Tipping points — the idea that once a threshold is crossed you enter into a new state of being is common in the larger discussion about climate change. Typically, these tipping points focus on ecological or earth systems shifts such as ice sheet collapse, thawing permafrost, coral bleaching, destabilization of Atlantic circulation or transitions from rainforest to savannah in the Amazon. Many of these shifts are accompanied by feedbacks that further accelerate climate change—ice sheet collapse can amplify regional warming; influxes of freshwater further shift Atlantic currents that cause monsoons and drought in the Sahel; thawing permafrost releases more carbon dioxide and methane into the atmosphere accelerating change.

We often don't think about social tipping points. What I think we are seeing both with the Australia wildfires in 2019/20 and the Camp Fire in the United States in 2018 — and with so many fires in so many countries where our normal responses are failing us — are social tipping points that are shifting our collective imagination of what we are dealing with. Slowly, we are waking up to the rising complexity and reality that the planet may be changing and we need to adapt with it. Are we prepared and looking far enough into the future to deal with what we have and what is coming?

If Australia is facing fire seasons like the one just experienced, we will need to see great social change. One idea advanced by David Bowman at the University of Tasmania is to shift the timing of summer school holidays so everyone is not on vacation during fire season. Entire ecosystems in Australia may not recover and evolve into something completely different — how will people and the landscapes with which they have co-existed adapt? Should we declare some areas unsuitable/unfit for human habitation? Should household firefighting equipment and a bunker be mandatory in some areas? Should we pre-evacuate vulnerable communities on severe weather days? Should we dramatically escalate the amount of area that we hazard reduction burn, and ignore complaints of smoke and damage to crops?

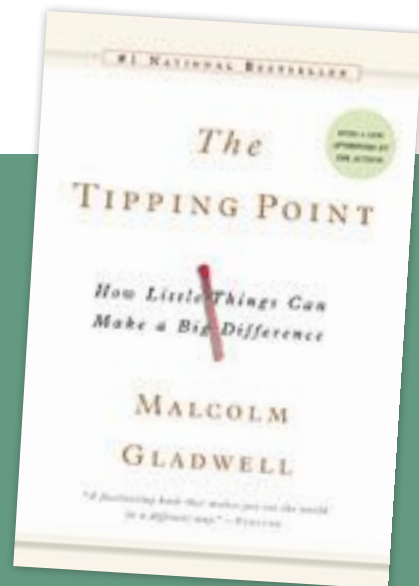
“What I think we are seeing both with the Australia wildfires in 2019/20 and the Camp Fire in the United States in 2018 — and with so many fires in so many countries where our normal responses are failing us — are social tipping points that are shifting our collective imagination of what we are dealing with.”

Importantly, do we have reason to be more hopeful now about change than after the Black Saturday fires in 2009. When 174 people perished in those fires there were similar discussions. But a decade of follow up research from later fires showed that people were no better prepared, despite seeing how bad things could really get. It's too soon to make conclusions about this year's fires but the question is timely: Will this year be a social tipping point or a lost opportunity?

Humans are not good at imagining, conceptualizing, describing, and planning for the very worst possible scenarios. Paradise, California, the site of the Camp Fire, had a nearly 20-year history of very actively preparing for and expecting wildfire — the public participated in and contributed to the development of the evacuation plan, and ensured that neighbors received and understood it. But the unimaginable erased all previous risk reduction efforts. Ember storms ignited the entire town simultaneously. 40,000 people had to evacuate — not in the meticulously planned phases, but all at once. We all know the results. This situation was never imagined or recognized.

The Camp Fire and other fires during 2017 and 2018 caused Pacific Gas and Electric, a major California utility, to declare bankruptcy. The cascading social consequences from these fires include higher utility rates, losses for shareholders, higher insurance rates or inability to insure, municipal bankruptcies and mental and other health tolls on the communities that have had to suffer through the trauma.

These tipping points stress our social, economic, and spiritual fabric. Can we recognize that we are tipping and if so are we prepared to imagine the world on the other side so we can better prepare, respond and adapt to it? IAWF seeks to pursue these important questions in collaboration with our members and partner organizations at our proposed Climate and Fire conference in 2021. I hope that you will consider participating and attending to help us imagine together.



“The Tipping Point” by Malcolm Gladwell popularized the concept of tipping points in 2008; the book blurb is even more timely today, though the real impacts, framed with wildfire and flu, may not be as magical as foretold: “The tipping point is that magic moment when an idea, trend, or social behavior crosses a threshold, tips, and spreads like wildfire. Just as a single sick person can start an epidemic of the flu, so too can a small but precisely targeted push cause a fashion trend, the popularity of a new product, [or a drop in the crime rate.]”

<https://www.littlebrown.com/titles/malcolm-gladwell/the-tipping-point/9780759574731/>

Recent research indicates that groups as small as 25 percent can tip the “the opinion of the majority ... to that of the minority.”

Centola, D., Becker, J., Brackbill, D., & Baronchelli, A. (2018).

Experimental evidence for tipping points in social convention. *Science*, 360(6393), 1116.

<https://doi.org/10.1126/science.aas8827>.


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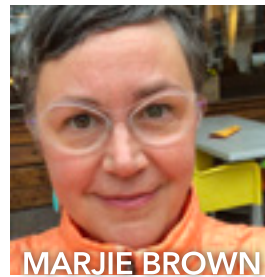


FIRE & PANDEMIC

IT IS OFTEN SAID THAT ALL POLITICS are local, and so it might be that in ways all illnesses are personal. Yet if the talk of our lives tell us that all politics are now global, then are all illnesses universal? Most certainly the COVID-19 pandemic is universal, and its political impacts global — a contagion at times invisible, triggering no or light symptoms, causing gruesome death in others, while the severe measures necessary to deal with the illness set us into widespread social distancing and a global recession. Those who seek a frightening image of a contagion's speed and spread tell us the pandemic spreads like wildfire. Yet amid this analogy the real wildfires burn, and some are even burning with the speed and ferocious damage of, well, a pandemic.

For wildfire and bushfire and prescribed fire managers and analysts and researchers, it's now our job to figure out how to manage fires amid a pandemic that spreads like wildfire. When the ideas, words, images, graphics and ads began to coalesce into this issue of *Wildfire*, the fires were still burning in Australia. Lives, houses, habitat and wildlife lost. Yet even before the rains, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) crossing borders to become the COVID-19 pandemic.

This issue offers a bridge across time — some content crafted from the black summer of Australia and before, some during the global challenge of the pandemic — yet oddly enough, there are themes and insights here, amid the flames, that show we have prepared. Our leadership columns begin with reflections on social tipping points by IAWF President Toddi Steelman, with Thoughts on Leadership columnist Mike Degrosky reflecting on leading across generations — even as we wonder how the pandemic will tip us, and how our risks (and our response to the risks) differ by generation. We share two initial analyses on COVID-19 and wildfire management, with a United States and Western US focus, plus an



MARJIE BROWN



RON STEFFENS

update on a global survey and additional resources — a window into the depth and diversity of the many responses our profession is crafting, testing, refining.

Unrelated to the pandemic (at least directly), Johnny Stowe explores another invasion, the “plague of pigs” that disrupt landscapes and the use of fire to manage landscapes. Other articles explore the incredible challenge of engagement — how do we learn, say, from one culture's management of fire and apply to our own? Which is the task Marcus Cornwell brought back to the US from his assignment in Australia. And how do we engage and cross the most challenging border — the human interface — which is explored in Australia and the United Kingdom.

But there are also the missing stories and images. Our medical editor is in the emergency department (our thoughts with him till we hear his words directly); the lessons from the International Smoke Symposium (held virtually) are online and waiting to be digested and shared; and each of our stories, as we prepare for and respond to (or ignite) fires in the time of pandemic, are waiting to be lived and told. Send us a note, keep in touch — but do so from a safe, social distance. As we've always learned and practiced on the fireline, keep your crew mate a tool's length and a safe shout away. - RS



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LEADING A MULTI-GENERATIONAL WORKFORCE

During and after the social-distancing phase of our COVID-19 responses, we may find our generational differences highlighted — in our virtual meetings or due to risk patterns and stressors that vary with age, gender, race and socioeconomic conditions. During these challenging days, we may wish to focus on overcoming age differences. “One thing leaders can bank on, Mike DeGrosky suggests, “is that regardless of age, everyone wants to be valued.”

MIKE DEGROSKY

Any leader even hoping to be effective in today's workplace will have to be very good at creating and maintaining a culture that not only works for people from multiple generations, but that purposefully cultivates and fosters collaboration between them. Here's my case. Millennials (21-41-year-olds) account for more than half of all employees in the U.S. and that share is growing. However, Baby Boomers are working longer, and the number of workers aged 65 and older is rising as well. At the same time, members of Generation Z (20-year-olds) are entering the workplace and bringing with them new expectations and work habits. It is not all uncommon these days to find Millennials, Baby Boomers, Gen-Xers, and members of Generation Z in the same workforce.

Consequently, leaders at all levels of organizations, regardless of their own generation, have no choice but to cultivate cultures that both attract and fulfill young people while satisfying older employees as well. The trick, leader-readers, is to simultaneously manage the strengths and weaknesses of each generation, foster engagement among people, and facilitate cross-generational collaboration.

With a multi-generational workforce comes multi-generational workplaces and, with multi-generational workplaces can come inter-generational tensions and conflict. That is, unless we recognize and acknowledge the challenges and lead well, with flexibility and adaptability.

Challenge: Focusing on differences. Much is made about the differences between generations, and generational differences are real. However, we tend to overemphasize them, and the research shows that those differences are slight. Yet listen closely in nearly any workplace today and you will hear Baby Boomers stereotyping Millennials and Millennials stereotyping Boomers. I've observed that what fractures multi-generational workforces

is often not actual differences between generations, but people's beliefs that meaningful differences exist. Those beliefs, left un-checked, can get in the way of how well people interact and collaborate with their colleagues, create artificial generational divides, and generally cause a lot of tension. Most differences between employees are the product not of generation, or even age, but by the uniqueness of people's personalities. For me, the key to overcoming this challenge is to encourage people to understand one another; then focus, not on differences, but on commonalities, shared goals, and common direction. Do what you can to get people to see themselves as part of a team working toward a common outcome to reinforce a vibe of “we” rather than “us versus them.”

Challenge: Generational factions. OK, so we tend to make too much of generational differences and those differences are not huge. Yet I still see people practically segregating themselves by age in the workplace. It's an understandable fact of life; people like to hang out with people their age with whom they have much in common. However, that self-segregating by age is also a thing that, if we are not careful, can splinter a multi-generational workforce in ways that are unproductive and not conducive to teamwork.

It has been my experience that colleagues from different generations can enjoy one another if they just allow themselves. However, the tendency to gravitate to people our age, with whom we perceive we have the most in common, can create generational factions and cliques in the workplace and send, both intentionally and inadvertently, a message of exclusion that is not conducive to strong teamwork. I can think of few things that affect a work group as negatively as having an “in-group” and an “out-group” regardless of whether the inclusion and exclusion are real or just perceived. For me, the key to preventing generational tension is remembering that everyone wants to feel valued and respected.

One thing leaders can bank on is that regardless of age, everyone wants to be valued. If the way you are relating to the older or younger members of your team (or the way they are relating to one another) is signaling, either openly or subliminally, that they are not valued, then people get their feelings hurt and the symptoms of hurt feelings include resistance, disengagement, anger, and insubordination. I don't know any organization or work unit that is optimizing performance when people are resisting, checked-out, mad, or inappropriately challenging leadership.

The key to overcoming this challenge is to encourage people to get to know one another as individual people and to spend time together both professionally and in work-related social settings. An effective leader of a multi-generational workforce should also develop ways to share and transfer knowledge by encouraging their team to learn from each with both traditional and reverse-mentoring opportunities.

Leading in a multi-generational workforce is hard work, complete with lots of "people-are-funny" kinds of challenges. However, leading a multi-generational workforce can also be an incredible gift; enabling a work climate in which tech-savvy, altruistic, ambitious and energetic young people, seeking meaning and fulfillment can work shoulder-to-shoulder with highly experienced veterans full of knowledge and wisdom who know how to get stuff done. In that environment, people from all generations have opportunities to learn so much from one another. Yet as I observe people in a variety of workplaces, I see people not allowing themselves to work effectively across generational lines – sometimes because of ego



Mike DeGrosky is Chief of the Fire Protection Bureau for the Montana Department of Natural Resources and Conservation, Forestry Division. He taught for the Department of Leadership Studies at Fort Hays State University for 10 years. Follow Mike on Twitter @guidegroup or via LinkedIn.

or image, but also due to any number of generational biases.

Among other societal trends that annoy the heck out me, I've come to loathe generational biases; first because they, like many forms of discrimination, are fiction that serve to separate us into opposing tribes. Tribes within a work unit are antithetical to the collaborative teamwork on which effective modern organizations thrive. From the research I have done, I have come to believe that generational differences at work are much smaller than we think; it's thinking that they're big that affects our personal, team, and organizational behavior in unfortunate ways.

It's time to stop thinking about some of the problems we see in our workplaces as generational issues. Honestly, if you've got a problem with an entire generation of people, it's likely that you are the problem. I'd encourage leaders at all organizational levels to create a culture in which we stop using generational differences as an excuse for distance between people and lack of cohesion; and to focus on fostering communication and collaboration that brings us all closer together and enables people, teams and organizations to do their best work.

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OUTSTANDING EDITOR, SMOKE SYMPOSIUM MOVES VIRTUAL

2019 Outstanding Editor for IJWF – Fernando Ojeda



Fernando Ojeda, Professor of Botany, University of Ca'diz Spain; leading researcher of the FEBIMED research group (<https://www.febimed.org>).

The reputation and performance of a journal's Editorial Board is vital in maintaining the quality and continually improving the stature and visibility of that journal. On this

note, we are very pleased to announce that Professor Fernando Ojeda is the winner of the Outstanding Editor Award of the International Journal of Wildland Fire for 2019. Please join us in congratulating Fernando for his many years of dedicated and exceptional level of service to the journal as an Associate Editor.

Based at the Department of Biology at the University of Ca'diz since 2008, Fernando's research group is located in the Strait of Gibraltar region, a major plant biodiversity hotspot within the Mediterranean Basin. As such, his research

interests lie in the areas of plant biogeography, ecology of fire and evolution of Mediterranean plants, biotic interactions in carnivorous plants, and biodiversity and conservation of fire-prone Mediterranean heathlands.

Fernando graduated with a Ph.D. from the University of Sevilla, Spain, in 1995. He is the author of 80 scientific contributions (<https://scholar.google.es/citations?user=os085oEAAAAJ&hl=es>). In the last five years, he has led two research projects and one research contract, and has a strong commitment to outreach and education, as evidenced by his involvement in the production of two documentaries, one on the ecology and biodiversity of the *herriza* or Mediterranean heathland (<https://www.youtube.com/watch?v=u0YpOcl27Nw>) and a more recent one on the ecology of the carnivorous plant *Drosophyllum lusitanicum* (<https://www.youtube.com/watch?v=vy-fPF6Kejw>).

Fernando has been an Associate Editor of the International Journal of Wildland Fire since May 2006. We are pleased to add the 2019 IJWF Outstanding Editor Award to his impressive list of achievements, and we most whole-heartedly thank him for his exceptional service to the International Journal of Wildland Fire.

3rd International Smoke Symposium Virtual Conference

After careful consideration amid the Coronavirus/COVID-19 outbreak, it was decided to host the Third International Smoke Symposium as 100% Virtual. The Virtual Conference was held April 20-23, with over 500 attendees and all presentations recorded and available for up to one year.

The symposium gathered an international nexus of research, management and policy with a target audience of governmental air quality regulators; land managers and fire practitioners; research and extension communities; public health professionals; air quality and fire weather forecasting communities; and climate change researchers.

ISS3 included five keynote presentations and panel sessions; 145 concurrent sessions; 40 poster presentations; and a full-day

Wildland Fire and Health Summit sponsored by UC Davis School of Medicine, with five virtual workshops on Monday, April 20.

The Virtual Conference platform allows attendees to interact and engage in discussion with the presenters as well as the other

attendees. The full program can be viewed on the symposium webpage: <https://www.iawfonline.org/event/3rd-international-smoke-symposium>.

Registration for

viewing the archives will be available, which includes access to all sessions from the week of April 20-23 as well as access to the recorded sessions for up to one year afterward. Also, after the ISS3 we will add presentations from ISS1 and ISS2 to the site.



CONFERENCE NEWS

Fire Ecology Across Boundaries: Connecting Science and Management

Shared by Pau Costa Foundation
and Association for Fire Ecology

The Situation: Global challenges call for local yet interconnected solutions

Science suggests that climate change is far from reaching a stable situation. We are already experiencing its effects through unprecedented wildfire conditions around the world. The fire paradox is manifesting itself in many regions. Where there is an absence of small-medium fires or fire management in general, the few wildfires that escape from control become larger and more severe causing catastrophic impacts on nature and society. It is becoming increasingly evident that fire suppression is no longer a viable approach to the current predicament.

Fire-prone countries are experiencing some of the most extreme wildfires ever observed, with the capacity to erase entire ecosystems from the face of the Earth. These extreme fires are uncontrollable even for the most advanced fire agencies, causing important environmental and socio-economic losses. Many less fire-prone countries had never considered wildfires as a real threat, but as fire regimes shift due to climate change, the exposure and vulnerability of ecosystems in those areas is changing as well. This global increase in wildfire frequency, intensity, and severity may lead as well to the release of large amounts of carbon, further exacerbating climate change.

Europe is experiencing both scenarios. For instance, in 2017, for the first time in recent European history, extreme “megafire” events took place in Portugal, twice in one year. Then, in 2018, throughout the continent, unprecedented wildfires burnt simultaneously from the Mediterranean (e.g., Greece, Portugal) to Scandinavia (e.g., Denmark, Sweden).

European forests, grasslands and shrublands are adapted to climate conditions that are rapidly changing and may not be ready for the new emergent climate. Thus, two management strategies open up which need to be debated. One option is to let nature adapt with no (or little) intervention, even if this means coping with



“Walking together.” Art: Josep Serra Tarragon.

the impacts of unprecedented disturbances such as extreme wildfires. Alternatively, through interventions and management strategies, we can facilitate a more sustainable evolution of these ecosystems that can contribute to more successful climate adaptation and increase their resilience.

Those options raise many uncertainties. Which option better guarantees the maintenance of essential ecosystem services in the long term? How can we make society understand the complex tradeoffs these options imply and how can it participate in the work necessary to implement these solutions? Where should research and innovation investments be focused? The current situation evidences the need for a global debate on identifying effective local solutions.

The Response: A conference focused on connecting

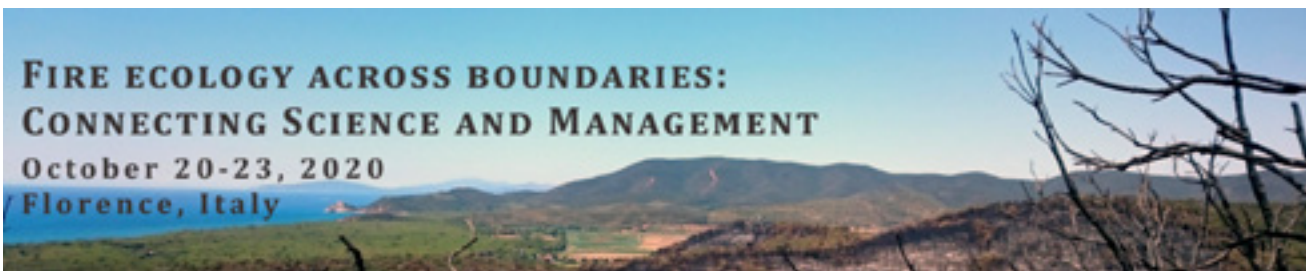
The conference *Fire Ecology Across Boundaries: Connecting Science and Management* aims to bring together the global wildfire community to more effectively exchange knowledge and understanding about the possible contributions of fire ecology to fire management. Such coordination is needed to help provide solutions that balance overall ecological conservation goals and wildfire risk reduction.

The present challenges demonstrate the need to enhance the debate on potential solutions: cost-efficient alternatives to the wildfire suppression approach, learning from traditional landscape management and local communities about alternative adaptation strategies to a changing climate, the benefits of prescribing fire to maintain long-term ecosystem services and finally the need to establish a wildfire risk culture through transdisciplinary science that can at the same time enhance effective societal engagement in the management of the problem. Decision makers and society need tools and

leadership to understand and prepare for future extreme fire events and build adaptive resilience.

Experts from Europe and around the world are invited to gather in Florence to share new and innovative fire ecology findings and expertise, and to engage in a forum for discussing potential solutions to these emerging issues. “Fire Across Boundaries” will be a meeting point for international wildfire and landscape managers, scientists, policy makers, communicators and other representatives from national, regional and local organizations. The conference will be a space to understand and discuss the global wildfire situation and regional challenges, the uncertainties that need to be addressed, and potential solutions on wildfire mitigation.

The four days of workshops, concurrent sessions, networking activities, and fieldtrips will provide ample opportunities for learning, interacting, and networking with peers from other regions.



CONFERENCE DETAILS

The Association for Fire Ecology (AFE) and Pau Costa Foundation (PCF) are partnering with Regione Toscana and University of Florence to host the Conference.

Dates:

20-23 October 2020

Location:

Auditorium di Santa Apollonia,
Via S. Gallo, 25, 50129
Firenze FI, Italy.

Hashtag:

#FireFlorence2020

The call for submissions is open for abstracts and workshop proposals is open until April and May, respectively.

For more information on the topics accepted and the submission processes: <http://fireacrossboundaries.org/>



COVID-19 UPDATE FROM CONFERENCE ORGANIZERS (AS OF MARCH 24, 2020):

Our thoughts are with those worldwide who are being impacted by the coronavirus. At this time, we are proceeding with plans for the Fire Across Boundaries conference this fall and developing contingency plans as we continue to monitor the situation. We have extended the dates for accepting abstracts for the Call for Proposals and for opening registration. We are also working on options to participate in the conference virtually should that be needed. We will be following the advice of pertinent health officials and organizations with a focus on the well-being of our attendees, presenters, and the Florence community. The website will be updated with changes or contingency plans as soon as possible, and you are welcome to email us at office@fireecology.net with any questions or concerns.

There are so many reasons to become a member of the International Association of Wildland Fire!

All members can stay current on emerging issues by following our webpage, attending IAWF hosted conferences, reading Wildfire Magazine, and following the latest research in IJWF. You can also find a network of associates to share ideas and tools or work on common problems through our international membership.

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406-625-7059 or 888-440-IAWF (4293)
execdir@iawfonline.org



BY TOM ZIMMERMAN, TODDI STEELMAN AND MIKEL ROBINSON

INAPPROPRIATE BEHAVIOR, DIVERSITY, AND INCLUSIVITY – STRIVING FOR CHANGE, FACILITATING DISCUSSION, AND CREATING A PROCESS TO SPEAK UP

To build a safe, comfortable, respectful and inclusive environment for all IAWF members and our professional colleagues, IAWF's leaders are taking steps to effect change, give greater attention to diversity and inclusivity, and stand against inappropriate behavior.

Introduction

The International Association of Wildland Fire (IAWF) is a professional association established to facilitate global communication about wildland fire and provide leadership

Changing culture begins with each of us – we must live our values and lead by example.

through a neutral forum that considers and addresses all important, and at times controversial, wildland fire issues. In the conduct

of personal and professional matters, we place high importance on the values of integrity, responsibility and reputation. We are committed to maintaining high standards both within the organization and in our dealings with others in our daily lives.

Awareness has been steadily increasing in regard to diversity, inclusivity, and incidents of inappropriate behavior in wildland fire management. As a result, IAWF leadership determined that the association needs a clear and firm position on diversity and inclusivity coupled with a process for members to report inappropriate behavior and follow-up action to occur as needed.

The Process of Moving Forward

We have taken steps to define what we believe are the major elements of focus as we strive for change, facilitate discussion, create a reporting process, and incorporate positive action into our diversity and inclusivity directions for the future. These general steps are shown in Figure 1.

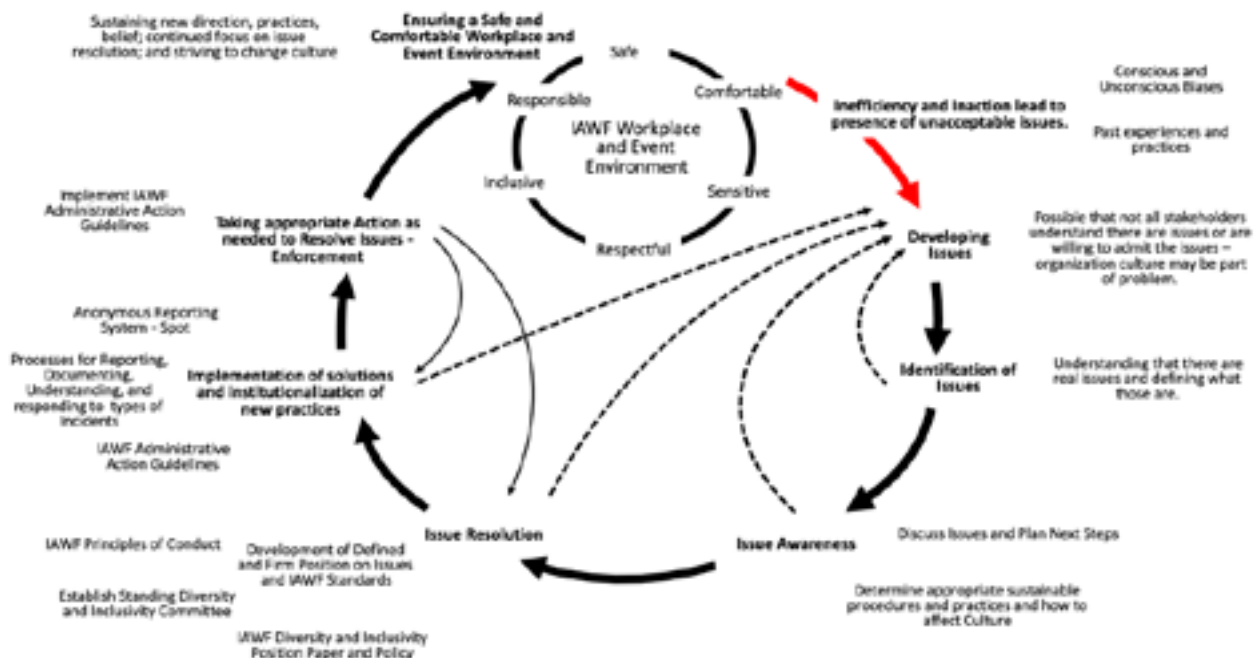
In this figure, we show the IAWF workplace and event system in the top center as a functioning system providing a safe, comfortable, sensitive, respectful, inclusive, and responsible environment. However, when inappropriate behavior or over-reliance on past experience and practices cause any of these elements to be compromised, situations begin to develop that move the system out of sync. Once out of sync, inaction can

lead to issues festering or further compound issues into more serious problems. Individuals may not understand they are the cause of issues or in other cases they may be the perpetrators of intentional and willful misconduct, harassment or worse. In some cases, stakeholders may be reluctant to admit that these are even real issues. When we find the system out of sync, we need processes that allow us to systematically correct the system to ensure a safe, comfortable, respectful and inclusive environment for all IAWF members.

The IAWF process will support our Association and membership as we actively confront current issues associated with diversity, inclusivity, and inappropriate behavior. We have identified multiple steps within this process to develop and implement a sustainable program of action and these include:

1. Identification of issues - realizing, understanding, and accepting that there are issues and that they need to be addressed in order to move forward.
2. Issue awareness and preparing to resolve issues
3. Issue resolution - developing an Association position.
4. Implementation of solutions and process institutionalization – developing Association administrative actions and creating a simple, but effective reporting system for IAWF members to be able to speak up.
5. Taking appropriate actions as needed to resolve issues – monitoring and enforcement.
6. Moving back into an efficiently functioning system – establishing and sustaining a safe and comfortable workplace and event environment.

Figure 1. Ensuring a safe and comfortable workplace and event environment – IAWF's process.



The stages including identification of issues, preparing to resolve issues, position development, and development of a

Culture must change to affect how we think about diversity and inclusivity.

reporting system (steps 1-4) are critical to the overall process. In the absence of any one or more of these stages, we would very likely lapse back to inertia

and inactivity, which in turn would lead us back to the stage of having issues that were either not known, not recognized, or not acknowledged. Regardless of the case, the issues would remain and our goals would go unachieved; an unacceptable situation. This potential is shown in Figure 1 by the dotted arrows returning to the developing issues stage.

A strong interdependence exists between defining IAWF standards, policies, and procedures, developing a reporting process, taking actions on inappropriate issues. Appropriate action cannot occur unless a defined position and a system for reporting of incidents exists. This is shown in Figure 1 by the solid arrows feeding back from the stages of implementation and taking appropriate action to the issue resolution stage.

IAWF's Actions to Date

IAWF has completed products, identified processes, and taken actions in each of the stages shown in Figure 1. Actions taken during IAWF's process are described in the following sections.

Identifying the Issues:

Imbalance in gender representation at professional conferences, instances of sexual misconduct and harassment, lack of inclusivity, and a culture ingrained in use, acceptance, and tolerance of insensitive, disrespectful, and hurtful remarks have risen to the forefront of conventional and social media and thinking today.

Steelman and Riley (2018) clearly describe how these issues have permeated the wildland fire discipline as well as other areas. The widespread occurrence of repeated instances of sexual harassment, sexual misconduct, and gender discrimination has been identified in many government bureaus including the US Forest Service, National Park Service, and US Military agencies. But, this situation is not limited to the United States, as Canada and Australia and other countries report comparable trends.

Specifically, IAWF identified that recent IAWF sponsored conferences under-represented minority and female scientists in plenary speaking roles. IAWF finds these trends unacceptable and is acting to reverse these trends, shift cultural thinking, and make positive changes.

Issue Awareness and Preparing to Resolve Issues:

A discussion focusing on these issues among the IAWF Board of Directors highlighted the need for development of several clarifying documents and the definition of a firm Association position on diversity and inclusivity. Issues were discussed and the framework laid out for developing our next steps and setting our course of action for the future.

Issue Resolution and Developing a Defined and Firm Position on Issues:

Before any kind of positive actions could be implemented, IAWF realized that several important steps must be completed to ensure its policy could become firm, usable, and enforceable. At this time, the Board also established a new standing committee to lead all efforts on diversity and inclusivity. This committee is the IAWF Diversity and Inclusivity (D&I) Committee.

The steps prerequisite to full policy implementation consisted of four principal elements including:

- an IAWF Policy and Position on Diversity and Inclusivity;
- Principles of Conduct;
- Administrative Action Guidelines;
- and Administrative Actions Guidelines Chart.

The Board created the Association policy position and the D&I Committee led efforts to develop the accompanying documents to ensure that our position was clear, understandable, and usable. These included the IAWF Principles of Conduct and the IAWF Administrative Action Guidelines and Chart.

Development of Policy:

A clearly stated and definitive position on diversity and inclusivity was our first and most critical step in moving forward. As a result, the Association passed a resolution stating that diversity and inclusivity across gender, age, all ethnicities and all other underrepresented groups would be a priority. A policy position paper was prepared and made available membership-wide and publicly (<https://www.iawfonline.org/wp-content/uploads/2018/05/IAWF-Diversity-and-Inclusion-Policy.pdf>).

In this policy, IAWF reinforces its desire to maintain a positive, empowering, inclusive, and innovative culture where all members of the wildland fire community feel safe, valued, heard, and included.

Development of Baseline Standards of Conduct:

Once the policy was complete, the Board was determined to define baseline standards of conduct and behavior to clearly show our intent and meaning. These standards needed to be readily available and easily understandable.

Principles of Conduct were completed for the Association that reinforce our commitment to the importance of the values of integrity, responsibility and reputation in the conduct of personal and professional matters. The Principles of Conduct define our accepted and unacceptable ethical behaviors and are viewed as mandatory. It is expected that all members and other participants at all IAWF professional activities will abide by them at all times. As such, these Principles are regulatory and will be used to guide management in ethical situations.

Completion of these standards demonstrated IAWF's respect for our profession, our professional and personal relationships with others, and our respect and commitment to the long-term vision, diversity and inclusivity goals, and values of the Association. They help ensure that IAWF promotes, achieves, and maintains high standards of practice. They provide a benchmark for members and non-members in future activities. IAWF Principles of Conduct can be found at: www.iawfonline.org/wp-content/uploads/2019/02/IAWF-Principles_of_Conduct_FINAL.pdf.

Development of Administrative Action Guidelines and Chart:

Once our standards of conduct were defined in the Principles of Conduct, it was necessary to develop a framework to guide any IAWF response actions to any instance of misconduct. An Administrative Action Guidelines Chart was prepared that describes incident severity in categories of minor, severity, and unacceptable. It also provides a description of appropriate follow-up actions. The Administrative Action Guidelines describe the process to be followed once a report of misconduct is received. In this process, IAWF will review and document the complaint, define potential options, determine severity of the incident, and take appropriate action. Appropriate follow up actions are also defined in the Administrative Action Guidelines Chart.

Implementation of Solutions and Process Institutionalization:

Any instance of misconduct, whether personally experienced, witnessed, heard of by word of mouth, or other means, should be reported. Reporting an instance of misconduct is the only

No incident is too small to ignore. Every incident is important. Incidents of any severity will no longer be ignored.

way to ensure that the situation is made known, action can be taken, and changes can occur. If we are to effect change in culture and thinking, it is everyone's responsibility to speak up. However,

incident reporting is not easy and can be pervaded by feelings of awkwardness, embarrassment, being judged, or singled out. Speaking up should not be something that is dreaded or limiting.

Development of a Process for Reporting Inappropriate Incidents:

Common reporting methods such as face-to-face discussion, email, text messaging, telephone, and internet sites do not necessarily resolve the concerns stated above and have the potential to limit reporting. To properly address reporting, a system needs to be aligned with privacy, confidentiality, and anonymity, to enhance opportunities for reporting.

In an effort to ensure safety and comfort of all members and participants at all times at IAWF events, we have recently joined with Spot (<https://talktospot.com>) to implement an anonymous reporting tool for IAWF as a mechanism for members and others to safely speak

Helping people speak up about misconduct, harassment, discrimination, insensitivity, and other inappropriate behavior is a critical step in moving forward.

up, report, and document any incidents of inappropriate behavior and violations of the IAWF Principles of Conduct. Spot is a web-based app that is optimized for desktop and mobile devices, with a dashboard and management system for organization administrators. Spot meets all our concerns about a reporting system and has the advantages of being:

- Available 24/7
- An unbiased Artificial Intelligence (AI) - removes all unconscious bias
- A single management tool that handles reporting, feedback, action, and documentation
- Unlimited reporting
- Reports comments and follow-up
- A secure site
- Anonymous – no identity required for follow-up – reporters can remain anonymous. If reporters choose to remain anonymous, their name and email will never be known by or reported to IAWF.
- Anonymous follow-up from IAWF to the reporter but the email of the originator remains anonymous.
- Spot allows users to create a report but submittal of the report is optional to the reporter. The details of what happened, when, and where, can be addressed with the unbiased, anonymous chat bot in the AI system. It allows IAWF to follow-up while the reporter can provide their name or remain anonymous. This system provides safety and security.
- Individuals filing a report can prepare a private report that they can choose to not send to IAWF and no one will ever see it but them. It is retained in the Spot system for one year in the event the reporter wants to send it later.

We are excited to add this capability to our efforts to encourage individuals to speak up and help reduce inappropriate behavior in our activities.

IAWF has implemented Spot and individuals can reach it at the following link posted on the IAWF webpage at <https://www.iawfonline.org/diversity-inclusion/> or by using the QR found on the Spot flier on the IAWF webpage, an example of which is shown in Figure 2.



Figure 2. IAWF and Spot information dissemination poster with access QR code and access web address.

Taking Appropriate Action – Enforcement: Once the Association position was clear, we needed to decide what to do about

Unacceptable behavior
will not be tolerated

violations of those standards and how such violations would be addressed so that our Association could once again become safe, comfortable, respectful and

inclusive for all IAWF members. The Administrative Actions Guidelines defined the process that IAWF will follow for reported instances of misconduct. Any Association responses to those instances are guided by an Administrative Actions Guidelines Chart.

Administrative actions that IAWF may take will be commensurate with the determined incident severity and can range from discussion between the accused person and an IAWF official, reprimand, revocation of membership and expulsion from the Association, ban from IAWF conference speaking and/or attendance; or other disciplinary action.

Moving Back into an Efficiently Functioning System. Once steps 1 – 5 are completed, as shown near the top left part of the chart in Figure 1, IAWF feels that we will have a greater ability to ensure a safe and comfortable IAWF workplace and event environment than ever before. With this, we will be able to move forward with our

diversity and inclusivity goals.

Our Pathway to the Future

IAWF is very proud of its position on diversity and inclusivity. We want to identify the issues in the wildland fire community and take actions to change the culture, thinking, practice, and outcomes to create the most effective working environment in wildland fire management for all IAWF members. We want to see an appreciable decrease in negative behaviors and greater equity in workforce diversity and inclusivity in wildland fire management. The process described here can guide us through previously unaddressed issue areas. We feel that we are on a positive path and have the tools and capabilities to identify issues, resolve issues, communicate standards to our members, and take actions when appropriate. Much of this process will be a learning experience for us and will evolve as time moves on but getting a positive start is an important first step.

Diversity and inclusivity will and should continue to garner greater importance. Awareness and promotion of diversity and inclusivity will make us better at what we do and strengthen professional wildland fire management.

Every voice must be heard – every voice will be heard

REFERENCES

Steelman, Toddi, and Karin Riley. 2018. From the Vice-President's Desk: #METOO for the Wildfire Community. *Wildfire*: 27.3:4-5. <https://www.iawfonline.org/article/from-the-vice-presidents-desk-metoo-for-the-wildfire-community/>.

ABOUT THE AUTHORS

Tom Zimmerman (past president, IAWF) and Toddi Steelman (current IAWF president) served as co-chairs of IAWF's Diversity and Inclusivity Committee from 2018-2019, and Tom continues as co-chair. Mikel Robinson is executive director of IAWF.

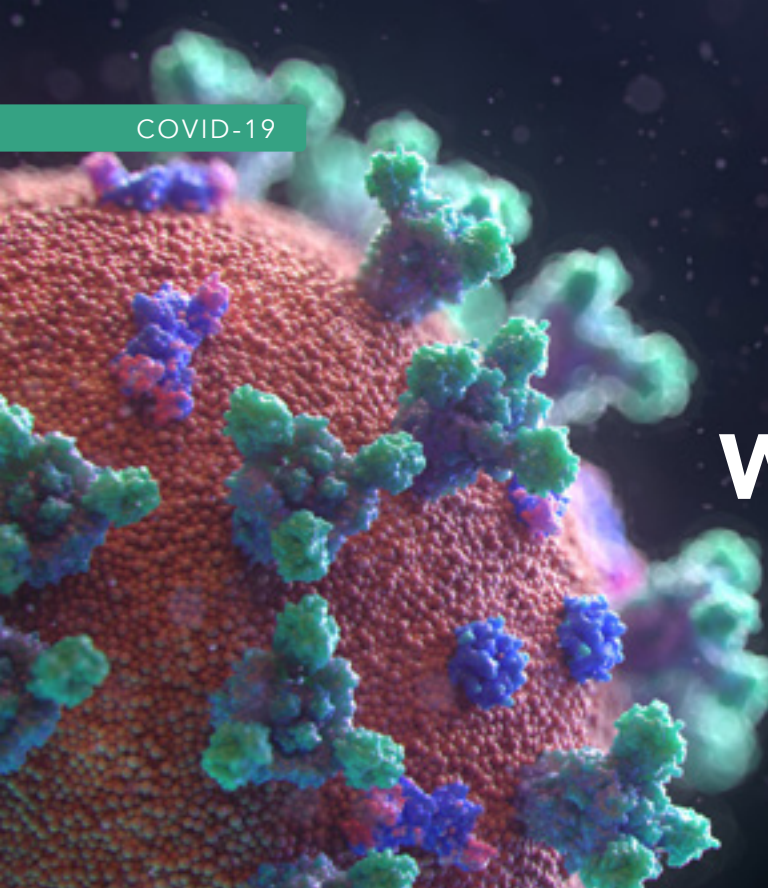
ACKNOWLEDGMENTS

Our Diversity and Inclusivity Committee has worked very hard to complete these initial steps for the association as the lead on nearly all efforts to date. Their enormously productive efforts are yielding exceptionally important innovations and improvements and are helping further advance our position and capabilities. IAWF would not be where it is at this point in time in regard to Diversity and Inclusivity without the combined efforts of all members of this committee (the full D&I Committee membership is listed at <https://www.iawfonline.org/iawf-committee-members/>).



Dauntless Air is an aerial firefighting company that exists to protect people, land and property. We fly to win the war against wildfires.

To learn more, visit our website at **dauntlessair.com** and download our vision paper, Transforming Aerial Firefighting for a Changing Environment, or reach out to us at **320-297-9088** to find out how you can strengthen your rapid initial attack capabilities.



MANAGING WILDFIRES AND PRESCRIBED BURNS IN A PANDEMIC

At the Third International Smoke Symposium in April 2020, COVID-19 appeared on the agenda of a conference that had transitioned from partially online to entirely virtual, due to the social distancing required as we face the pandemic. As we prepare continued coverage on smoke impacts on health during the pandemic and a range of global efforts to manage wildfire while providing for safety amid the pandemic, we offer these first installments: a digest of two approaches with a United States focus — sharing strategies that may apply wherever you manage wildfires and bushfires amid the pandemic — and we share an initial summary of a survey of responses by fire managers globally.

A national Area Command approach for preparation for a pandemic-fire season.

Q&A with Joe Reinarz, Area Command Team Coordinator

As many in the US wildland fire system prepare for or already engaged in their fire seasons, a range of questions are being resolved regarding safe and effective methods for managing wildfires amid the coronavirus risk. An updated medical guidance for pandemic response was issued and three Area Command Teams embedded within Geographic Areas to develop strategic fire response plans, with a National Incident Management Organization (NIMO) based in Boise, Idaho to provide Area Command Team coordination.

We posed questions on this process and received written answers from the NIMO Incident Commander, Joe Reinarz, who is serving as the Area Command Team Coordinator. Responses were received April 3, 2020, the day that the USDA Forest Service chief, Victoria (Vicki) Christiansen, released the seasonal “Chief’s Letter of Intent for Wildland Fire – 2020.” (See online article for a link to the Letter and to a range of pandemic-response planning tools.)

THE PROCESS

Q: As the Area Command team gathered and synthesized the assignment, what stood out as the two or three key issues, and how did these shape your planning and implementation process?

A: The safety of the public and all wildland fire responders is always the number one priority for all wildland fire agencies.

Currently, the wildland fire management agencies, in close coordination with their state and local partners, are taking the necessary steps to ensure their ability to deploy wildland firefighting resources.

While COVID-19 circumstances are rapidly evolving, wildland firefighting agencies are actively assessing potential risks and developing plans to mitigate those risks as the COVID-19 response continues.

It was very apparent that previous suppression methods of gathering and supporting large numbers of firefighters was not going to be practical for the coming fire season. This will require us to develop new support systems and increase the probability of support functions being virtual to maintain social distancing.

Q: What prior assignments prepared you for this, and how have you adopted/adapted prior lessons learned.

A: Area Command and Incident Management Teams are trained and experienced in all aspects of incident response. These teams are staffed using the highest qualified individuals in the areas of Command, Planning, Logistics, Aviation, Public Information, Finance, and Operations. Teams have been involved in managing a multitude of incidents including large scale fire campaigns, hurricane response and large scale planned events i.e. sporting events and parades.

All the members of the Area Command Teams and Type II team have been working in the team environment for many years and have been involved in extremely complex incidents both nationally and internationally.

IMPLEMENTATION

Q: Where will we find a clearinghouse of guiding principles?

A: The protocols will be integrated into Wildland Fire Response Plans and will be available to Geographic Areas, Incident Management Teams (IMTs), and local units to help guide effective wildfire response.

The Teams will also be working with and following guidance from federal, state, county and tribal health officials.

These Area Command Teams and the Type II Team are working directly with National Multi-Agency Coordinating Group (NMAC) and agency representatives; Geographic Area Coordination Groups (GACG); the National Wildfire Coordinating Group (NWCG); dispatch and coordination centers; local units; and federal, state and county health officials as appropriate to ensure thorough and current wildfire response plans are in place.

Q: How will it be suggested that we integrate these principles into our daily activities? (That is, are there hard-and-fast guidelines as well as best practices? Might there be an "After Action Review" or "Lessons Learned" approach for communal and open sharing of what's working?)

A: Response plans will include procedures for potential wildland fire personnel infection, which will be led by the local State Health Department following Centers for Disease Control and Prevention (CDC) guidance and protocol.

Best management practices (BMP) are being developed for all aspects of fire management response. These BMPs are being developed with input from a wide variety of sources including subject matter experts (SME) from fire response, fire management, agency medical committees, enterprise risk managers, researchers, social scientists, and all national, state and local health departments.

BMPs will incorporate direction from local, state, and national health departments and CDC, and from wildland fire response agencies, and will provide guidance for responding personnel on how to safely implement fire and support tactics and strategies.

The Department of the Interior and the U.S. Department of Agriculture wildland fire agencies, along with their state and local partners, will use the Infectious Disease Guidelines for Wildland Fire Incident Management Teams plan, developed by the National Wildfire Coordinating Group's Emergency Medical Committee, which includes recommended guidelines to be followed by an IMT when confronted with a potential infectious disease outbreak during a wildland fire response.

Q: As both Area Command guidance is refined, and local/regional/national teams implement the guidance, how might we — as a profession and as professionals — maintain our situational awareness? What will be the "unseen hazards" we might most look out for?

A: Due to the COVID-19 pandemic, wildland fire agencies will alter many of their typical pre-season preparation and requirements to embrace best management practices from the Centers for Disease Control and Prevention to reduce employee exposure to COVID-19 community spread.

To keep firefighters and communities healthy and safe, all firefighters are asked to follow recommendations from the CDC to reduce the spread of illness.

Q: In general ... What's next — the roadmap? -- for the Area Command process, and for the teams and fireline leaders who will be on the ground this fire season?

A: In this new environment it can be expected that there will be a hard stop on how we traditionally respond to incidents. In order to maintain social distancing for the safety of our firefighters, teams and the public it can be expected that our responses will occur as virtually as possible in the coming months.

There will be firefighters on the ground, but the public will see a different approach to how we organize to suppress a fire. These new organizations will be smaller in nature using some of the same tactics and strategies for line building and point protection that has been used in the past. Large fire camps will not be the norm any longer. Most of the efforts will be in small groups and dispersed into isolated camps or other means to provide our firefighters and the public better social distancing and safety from spread of COVID-19.

Although there is some fire activity in the southern area, Texas and Florida are in fire season and Minnesota in the Midwest may experience an increase in fire activity soon, above normal fire activity is not expected for most of the country through the month of May. The Southwest and Alaska could experience normal to above normal fire activity starting in late April. Most of the country will remain out of fire season during the next one to two months as precipitation continues to promote green vegetation, with the exception of the southern portion of the Great Basin and some dry areas of California.

Predictive Services specialists from the National Interagency Fire Center (NIFC) continue to monitor weather, vegetation, and overall fire potential for the country. These specialists consistently update fire managers to ensure fire preparedness, particularly in the coming months as the COVID-19 outbreak progresses and fire potential increases.



WILDFIRES AND THE PANDEMIC – WHAT’S AHEAD (WESTERN FIRE CHIEFS)

This statement, compiled and written by Bob Roper and issued April 1, 2020 by the Western Fire Chiefs Association (<https://wfca.com>), offers guidance to fire leaders and communities in the US West and beyond as they prepare for a wildfire season amid the COVID-19 pandemic.

BY BOB ROPER FOR THE WESTERN FIRE CHIEFS ASSOCIATION

Our world has changed! The COVID-19 virus is presenting a novel challenge to our communities and first responders, and we must adapt our wildfire management practices as well, starting today.

Historically, communities and first responders prepare for a wildfire and then respond to the fire's complexities. This has been a rather localized practice with a localized involvement. As wildfires have grown in size and scale, we are much more reliant on neighboring resources and in some cases multistate/international response. History has shown that there has always been some type of “reserve capacity” available in the system to combat the challenges.

In the 2000's, the nation began to experience hurricane seasons overlapping with fire seasons. These multi-hazard incidents began to acutely stress our nation's incident management system and resources because we had to share scarce resources. This scenario came and went over the years and the system seemed to cope with it.

Today with COVID-19, we have no choice but to begin thinking outside the box on how we will address our wildfire challenges.

Let's look at these challenges as our nation is focused on “stay at home” directives:

PREPARATION

- Burn bans – Certain jurisdictions are banning burn days and prescribed fires because of the inherent hazards complicated by an already stressed response force. Consideration should be given to improving the sophistication of monitoring and reporting on burn progress with technology.
- Parcel inspections – Many agencies have a defensible space program that relies on staff driving around and performing parcel inspections to determine what parcels need mitigation. These crews may be impacted from doing this task due to the abundant number of EMS calls they are addressing.
- Defensible space work – What should we do when defensible space work needs to be performed, but the property owner cannot do it? Will there be contractors available to do such work and will property owners have the available finances to pay for it?
- Community mitigation – The issue about home fire insurance rates will not end soon, due primarily to many state legislative sessions being suspended because of the COVID-19. It is extremely important now to have individual property owners recognize their responsibility and threats. Shared and individual mitigation actions are being impacted due to the “social distancing” direction. Some individuals needing to rent tools are sometimes finding closed rental vendors, therefore mitigation efforts are being compromised.
- Training, Certs & Quals – Crews must conduct annual readiness training as part of wildfire season preparation. The entire response system is built on certification and qualifications to ensure a viable resource response. Education and physical testing are part of this annual process. “Social distancing” directives and cancellation of courses have compromised this system.

RESPONSE

- Incident management – Incident management teams (IMTs) are already being assigned to help address COVID-19 issues. While this may not be a huge problem today, it begins to stress this resource's future capability as wildfires emerge. The nation's wildland fire system has a series of IMT classifications in relationship to incident complexities. As incidents escalate, the challenge will be to have enough and capable IMTs to address complex incidents as local, state and federal staffing pools diminish.
- Logistical support – Local, state and federal caches of equipment and private vendor support are also being shared with the COVID-19 effort. Will we be able to get mobile food units, food deliveries, temporary housing and technical services? Can small cramped mobile food units be reconfigured to prevent COVID-19 from exposing an entire incident?
- Firefighting resources – Personnel and equipment resources are already being multi-tasked today. As the COVID-19 peak impact is still unknown, we are unsure at this point what our resource availability level will be for all sizes and scales of wildfire incidents. We should not expect business to be the same regarding our own expectations for work production, work/rest cycles and filling of resource orders. Like health care workers, firefighters first concern is their families and then the incident, so how do you "keep your eye on the ball"?
- Evacuations – Incident commanders will order evacuations if a wildfire necessitates them. Due to stressed resource availability, evacuations may occur earlier and be greater in scale. The challenge will be:
 - Are there enough law enforcement resources to do evacuations?
 - Can we notice endangered populations?
 - Will residents leave their secured/isolated homes that they have stocked with food and toilet paper and go to an evacuation shelter?
 - Will less urgent evacuations have to be weighed against "social distancing" needs?
 - If people do not feel safe to evacuate, they may stay and not be prepared to stay and defend. This situation may further endanger 1st responders trying to facilitate rescues.
- Emergency shelters – Shelters have proven to be essential, yet they are scarce in numbers and are unable to house large populations. Emergency or evacuation shelters usually congregate public masses into crowded environments violating today's "social distancing" orders. This problem is further exacerbated by animal welfare concerns. Will evacuees become the new homeless population in their secured cars?
- Safety – Wildland firefighters will be torn between "social distancing" and performing mission tasks. Both objectives will be critical to the long-term success. The industry has historically found it a difficult task to find any respiratory protection that firefighters will wear during a wildfire, nonetheless a pandemic exposure. Also as we embark in this new world, there's still a lot of unknowns like if smoke or vegetation can transmit COVID-19?

RECOVERY

- Repopulation – Recovery starts with ensuring the environment is safe for residents' repopulation. Utility companies and public works crews may be stressed for available crews, therefore repopulation may be delayed. News of delayed repopulation efforts after the fire wildfire may

cause future evacuation orders to be dismissed.

- Disaster assistance staff - Local, state and federal disaster staff availability may be compromised due to competing efforts with COVID-19, thus delaying personal and the larger society economic recovery.

SO WHAT ARE THE OPTIONS?

In the fire service and emergency management, we adopted the saying, "We will improvise and overcome" when presented challenges outside of our normal environment. We can anticipate these needs and plan for them. This model is currently being done for the COVID-19 pandemic by using Navy hospital ships and invoking the Production Defense Act (PDA).

The overall fire service (local, state, federal) must immediately identify with the challenges listed previously and develop work-arounds. As we do not know when/if the COVID-19 will peak, we must think outside of our traditional paradigms.

Let's look at some options that can be implemented individually or collectively as situations dictate:

PREPARATION

- Defensible space
 - Inspections – Perhaps notify parcel owners from recent records that they need to do defensible space work and explain why. Conduct a simple outreach program to all parcel owners explaining the current situation and try to create an intrinsic rationale for compliance.
 - Use of retardants – If residents cannot do any work, a fairly simple option is to spray (homeowner or contractor) a fire retardant product on vegetation around structures. Retardants are available at local homeowner stores and can endure a fire season environment if there is minimal rainfall. Retardants will not extinguish a wildfire's embers, but they will greatly inhibit their expansion.
- Community Mitigation
 - Homeowners – Try to appeal to homeowners that can do their own work. They can perform mitigation work individually and maintain their "social distancing." Ask them to try to assist neighbors, especially those who cannot help themselves. Whatever green waste they generate, ask them to dispose the waste by using existing practices and if not able to due to volume, temporarily store the waste in an area away from structures. Direct them to contact their FIREWISE or local Fire Safe Council representative for assistance.
 - Maintenance – Educate people about how to properly maintain their homes from an ember intrusion following insurance, FIREWISE and local education programs. At a minimum, try to get a non-combustible clear 0-5' zone immediately adjacent to structures.
 - Ready, Set, GO! – If all else fails, this is the single most important option we have. People must begin to get prepared today for a wildfire by taking preventive steps, maintaining their situational awareness and GO! when directed or uncomfortable at their earliest moment. Staying to defend is only an option when you cannot leave, but you have to prepare for that situation today, not when the wildfire is knocking on your door.

- Training, Certs & Quals
 - We have little or no time to conduct refresher training or physical ability tests. We need to accept existing certs and quals and also need to utilize staff as needed based upon their demonstrated capabilities. Great start - Refer to the Fire Management Board (FMB) memo dated March 21, 2020 (Appendix A) for federal guidance and consider using it for state and local use too.

RESPONSE

- Incident Command
 - Expectations – Yes, it will be lonely at the top, because we may be going way from the standard firefighting performance norms. The first step in addressing response is to prepare the policy makers, public and our troops. All parties need to be made aware that their historical response performance expectations may not occur during the near future and the sooner they hear this, the better. With limited resources, our #1 priority is life safety!
 - Incident Management Teams – We have fallen into a practice that we will call a “team” to handle a certain complexity of incident. These teams are comprised of mixed staff from local, state and federal agencies, all which are affected by the COVID-19 pandemic issues. As the pool of IMTs is stressed, each incident should develop an organizational structure to handle their incident’s complexities and not wait for the “varsity” to come.
 - Logistics – The fire service differs from the military in that we respond and logistics follows vs. large-scale military operations that need logistics as part of the initial effort. We must create a logistical supply chain that will not suffer the same issues as neighborhood markets with empty shelves before we start essential tactical operations. Like health care workers, Personal Protective Equipment (PPE) must be available so firefighters can focus on their assignments knowing that they can help protect their families from exposure.
 - Finances & Jurisdiction – At this time, it is imperative that we use the closest resource concept and focus on life safety, property conservation and perimeter control and not jurisdiction. The incident objectives balanced with available resources should drive actions with finance concerns following up. This has occurred in the past during major fire sieges. Consideration should also be given to enact Stafford Act funding in advance of wildfires, as done for the COVID-19 pandemic.
 - Firefighters – With the traditional military resources being committed and the abundance of unemployed workers in the nation, consideration should be given to augmented staffing options in either a full-time or part-time status. Training should be focused on the wildfire mission so training requirements could be minimized. Another option is to reach out to retirees to perform incident base camp functions, open seasonal dispatch centers and hire seasonal firefighters as full-time staff ASAP.
 - Aerial resources – While aerial drops do not fully contain
- a wildfire, they can slow its progress until resources can arrive. They can also slow a fire’s spread rate to allow tactical operations and evacuations to occur. Studies have shown a larger national aerial fleet is needed and that early aerial drops result in smaller acres lost. The problem is that aerial contract(s) periods do not always correspond to when wildfires occur. Consideration should be given to maximizing aerial contracts as an initial dispatch capable resource along with corresponding support needs (i.e. Lead planes, retardant operations, etc.).
- Private resources – The first resources are usually agency firefighting resources and private resources often backfill Unable To Fill (UTF) needs. While private resources are usually not an initial dispatch resource, hiring practices could surely be streamlined to affect a quicker response.
- Technology – For too long, the release of available proven technology has been withheld from firefighting resources. It’s time certain restricted technology be quickly released and adapted for incident management purposes. Also, the implementation of the First Net system should be a high priority as well as ensuring public safety spectrum capability.
- Evacuations - There is a dramatic need for a public safety driven and controlled IT app for public noticing and evacuations that speeds access to IPAWS in rapidly moving events. This IT app should have preprogrammed evacuation routes downloaded, independent of cellular infrastructure support. As evacuations are ordered, try to have a corresponding repopulation plan ready. The first incidents ordering evacuations will pave the way for future evacuations. If the public complies and is repopulated efficiently, great! If not, subsequent evacuation orders will be riddled with issues due to the lack of public support.
- Emergency shelters – There is no easy answer for shelters. Shelters require volunteers and health care workers to establish sites, which may or may not be available and maintaining “social distancing” may not be possible. A last resort may be people congregating in large parking lots in their cars and RVs until it is safe to return. The best resolve may be to “shelter in place” if the IC believes it can be done safely.
- Safety – Develop plans for employees who may contract the virus or exposed others to the COVID-19 virus.

RECOVERY

- Repopulation – Follow existing repopulation plans but consider allowing re-entry ASAP. If the public can re-enter ASAP, they will be more obedient to follow evacuation orders. Repopulation will not be picture perfect, but people can take care of animals, live in their RVs, camp or whatever and feel secure at their own home versus an evacuation shelter. All we have to do is to provide access and the utilities and traffic safety features can follow.

CLOSING

Life is full of the unexpected and how we react to the unexpected determines our fate/success. We can begin to address the impending wildfire and COVID-19 challenges

today, unlike if an earthquake happened unannounced. We must think outside the box, improvise and overcome, and survive, but time is of the essence.

The intent of this document is not to instill panic, but to generate contingency thinking in the face of the COVID-19 virus' impacts. This document is not a complete guide as each situation has their/its own unique issues; this article is a simply thought-provoking tool. We have an opportunity and a narrow window to heed these thoughts/issues and begin respective contingency planning. Let's accept this challenge because like it or not, it is upon us. We can accept this challenge in a proactive role or face the consequences.

Take this topic to your respective crews and organizations; play the ultimate "what if" scenarios and build your continuity plans today!

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COVID-19: GLOBAL SURVEY BRIEF

An initial briefing of a survey of "Wildland Fire Management under COVID-19" is at <https://research.wur.nl/en/publications/wildland-fire-management-under-covid-19-brief-1-review-of-materia>.

COVID-19 will have major implications for wildland fire management, because of severe social distancing and hygiene requirements. The survey, open through May 15, 2020, is led by a team including Peter Moore, Food and Agriculture Organization, United Nations, and Cathelijne Stoof, Wageningen University, The Netherlands, has collected procedures and guidance created around the world (348 responses, 26 nations)

to help prepare wildland fire professionals for fire management during this pandemic. "Brief 1" summarizes initial considerations and guidelines for the global wildland fire community, with follow-up articles of complete survey results. By using existing groups and networks to discuss this issue, obtain input and collate ideas, it's possible to more quickly establish the principles and options for adapting to the constraints and opportunities that COVID-19 is imposing. Findings will be shared for use by developed and developing countries, to facilitate learning and collaboration among individuals, agencies, and countries.

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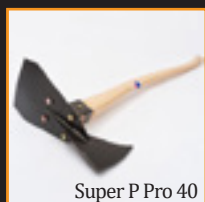
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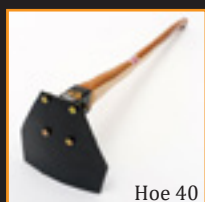
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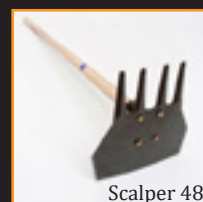
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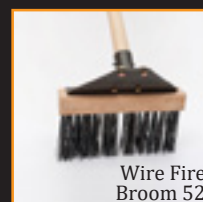
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UK Firewise recognized for building a sustainable and empowered community

BY LUCIAN DEATON

The well-earned recognition for the local accomplishments of Firewise communities knows no borders. This rang true once again as the Beacon Road Firewise community in Dorset, United Kingdom recently received the Neighborhood Watch Group of the Year Award from the Dorset Police Service.

I caught up with Lin Kettley, manager of the Firewise UK effort in Dorset, who shared her praise for the community. Lin said, “I am so pleased that the Beacon Road Firewise community has been recognized for all their hard work. From being evacuated following a large fire back in 2011, to being approached by us to become our first Firewise community and gaining this award, they have worked together tirelessly to make their homes, gardens and surrounding areas safer from the threat of wildfires.” Lin went on to say that, “They are a fantastic example of what community spirit looks like and I know that they will continue to thrive and are very keen to encourage other communities to join them.”

Community leader, Susan Jefferies, shared with me that, “The group was established formally 18 months ago, assisted by the [Dorset] Urban Heaths Partnership, to draw the community together to protect ourselves, our homes and the heathland from heathfire. We live on the edge of a large well-established area of heathland where



(Top) Lowland heath in flower, with fire approaching. Photo: Andy Elliott. (Bottom) The Upton Heath, East Dorset, United Kingdom in late November, 2019. This is an area where a major heath fire burned in 2011 threatening homes and prompting the local Firewise response. Photo: Ron Steffens.



A cleared firebreak on Upton Heath, Dorset, with Duncan Sowry-House from Beacon Road Firewise Community (right) and Dorset firefighter and fire expert, Andy Elliott, @Wild-fireTacAd (left). Photo: Ron Steffens.



The Firewise Launch image was he The launch of Firewise UK and the Beacon Road Firewise Community was celebrated by (left to right): Dorset and Wiltshire Fire and Rescue Service Chief Fire Officer Ben Ansell; Susan Jefferies and Duncan Sowry-House from Beacon Road Firewise Community; and Dorset Council Chief Executive Matt Prosser. Photo: Paul Atwell.

traditionally, regular and dangerous large fires have occurred every ten years or so when the gorse gets overgrown and dries out.”

Historic wildfires can be a strong community motivator. Susan explained that “The sparks for this group were laid 8 years previously, directly after an extensive fire when neighbors got together and realized that better planning was needed to ensure everyone knew about heathfires and how to act sensibly and safely.”

Now, brought together by Firewise, the community hosts seasonal work parties to clear ditches, undergrowth, and their own properties. Susan noted that, “This way we all get together, help those less able to clear their gardens and keep the neighborhood safer.”

Beacon Road also hosted its first Wildfire Community Preparedness Day in May, 2019. In an innovative approach, they partnered with the UK’s Exeter University to measure risks and flammability of their yard debris to influence future landscaping.

This focus on community-led action was highlighted by the award event’s program that stated, “The whole community is involved and the creation of the group and the excellent work of its members has brought forth a stronger, sustainable, and empowered community that cares for each other.”

Susan echoed this connection, sharing that, “We all know each other and are aware who might need assistance if they needed to evacuate in the case of a large fire causing a lot of smoke.”

NFPA applauds their well-deserved recognition as a great example of neighbors working together to reduce their wildfire risk. We hope others will follow their lead in the UK and everywhere else.

This article appeared originally on NFPA’s FireBreak blog at <https://community.nfpa.org/community/fire-break/blog/2020/03/13/firewise-group-recognized-for-being-a-stronger-sustainable-and-empowered-community>. Follow NFPA’s FireBreak blog and on Twitter for more international wildfire and policy related topics.



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WHEN PRESCRIBED FIRE FACES A PLAGUE OF PIGS

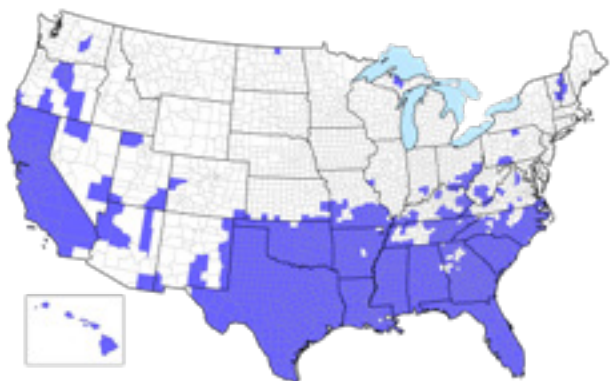
In Southeastern North America, free-range prescribed fire loses its effectiveness when free-range feral swine tear up the fuels. Lessons from the nexus of invasive species and fire management.

BY JOHNNY STOWE

Feral swine are causing yet another problem for the natural resources of Southeastern North America and the people who manage, enjoy and depend on them -- this time by interfering with prescribed burning.

Feral pigs (*Sus scrofa*) are invasive, non-native vermin that devastate the region's natural and agricultural resources. Native to Eurasia and North Africa, they don't belong in the New World. They were brought to the Americas by explorers and settlers in the early sixteenth century who let them range free, hunting or rounding them up now-and-then to eat, or for market. For centuries they were mainly confined to large river-bottoms, with rural folks in subsistence economies keeping their populations at bay.

Yet in recent decades, changes in land uses, translocation by hunters and other socioeconomic factors have led to wild pig population explosions across the North American continent. Not only are existing populations growing, but they are spreading to other states. In 1982 wild pigs were found in scattered populations in 18 states, but now they have been documented in at least 35 states as well as at least six Canadian provinces. In the USA alone, there are about 6 million wild hogs causing at least \$1.5 billion in damages per year.



Feral swine distribution, US.. https://www.aphis.usda.gov/wildlife_damage/feral_swine/images/2018-feral-swine-distribution-map.jpg.

Unchecked wild hog populations normally exhibit exponential growth – the classic “J-shaped” growth curve. No other large mammal on the continent has such reproductive potential. One of the first things I learned as a 4-H Club lad showing livestock in the county fair was the short gestation period of hogs – about three months, three weeks and three days. That’s bad enough, but they can also breed at six months and have six or more young per litter, with many, often most, surviving. Couple this with the fact that they did not evolve in North America and have no natural predators, competitors or population-limiting diseases or parasites – and the result is destructive, ecological irruption.

Wild pigs are one of the world's most destructive invasive species, being included in the IUCN's top 100 “World's Worst” invaders. In Australia they arrived on the First Fleet in 1778. Now feral swine there number some 24 million, and are considered among Queensland's most damaging pest animals.



Feral Pig Scan (Australia) for 2019-2020. <https://www.feralpigscan.org.au/feralpigscan/map.aspx>.



A “sounder” — a cohesive group of feral hogs comprising several sows and their offspring, and a few herd boars — on a turf farm in South Carolina (top), and the damage a sounder of hogs can do to soil and plants, in this case in a field of young corn (below). Photos: USDA APHIS Wildlife Services.



Wherever free-ranging pigs are found in North America they invariably harm natural ecosystems. They consume and trample rare plants and tree seedlings; raid corn, peanuts and other crops; and every acorn or other wild fruit eaten by a hog is one less that is available for white-tailed deer, wild turkey and other native wildlife species. Feral pigs also prey on ground-nesting birds and on amphibians and reptiles. They are a major threat to the nests of imperiled sea turtles, quickly learning how to find and root up the eggs. It's likely easier to name the things that they do not eat than it is to list the things they do. They also disturb archaeological sites and are hazards for automobiles and even aircraft.

Colliding with a wild pig is probably not high on the hazards of wildland fire aviation. But it could happen, though, and not just in the deep bush. In 1998 at Jacksonville (Florida) International Airport, a USDOD Air National Guard F-16 fighter was destroyed when it struck a pair of wild pigs. Commander Don Garrett, who was piloting the jet, was able to safely eject, but the \$16 million plane was destroyed. Colonel Garrett had flown jets for 24 years, including sorties over Vietnam, but this was the first time he ever had to bail out of an aircraft. <https://www.latimes.com/archives/la-xpm-1988-06-10-mn-5151-story.html>.

The wallowing of swine contaminates water sources and serves as potential vectors for diseases that are harmful, even fatal, to people. Wild pigs carry certain disease organisms that generally cause them little harm, but these same microbes can have severe public health consequences and cripple modern hog farming operations. They are known to carry at least 30 viral and bacterial diseases that can be transmitted to humans, pets, livestock and other wildlife. Now and then, in places where they aren't hunted, they get cheeky and attack people, livestock and pets.

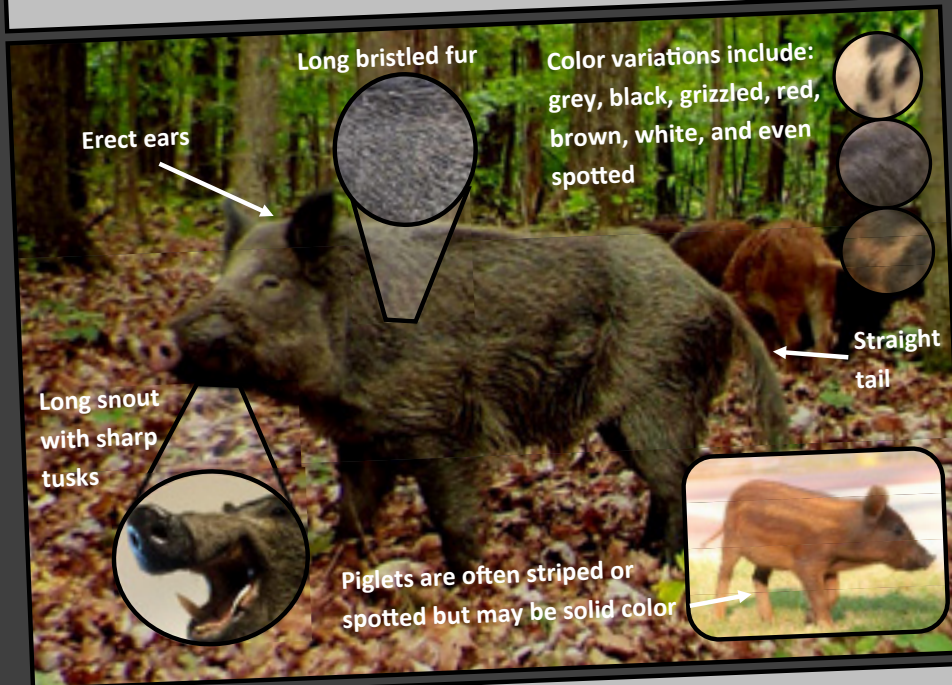


Origin and distribution of wild boar, from Barrios-Garcia & Ballari, 2012. Cited in <http://wildpigscanada.ca/wild-boar-information/history/>.

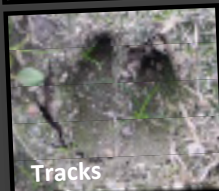
Identifying Invasive Feral Swine

Feral swine (*Sus scrofa*) are also commonly called wild hogs, wild boars, razorbacks, Russian boars, Eurasian boars, feral hogs, and feral pigs.

A photo guide to identifying and tracking feral swine.
https://www.aphis.usda.gov/wildlife_damage/feral_swine/pdfs/identification-infographic.pdf.



Signs of Feral Swine



To learn more about this invasive animal, the damage they cause, or to seek advice and assistance in dealing with feral swine, contact your local USDA, APHIS, Wildlife Services Program at 1-866-4USDA-WS or visit www.aphis.usda.gov/wildlife-damage/stopferalswine.

IMPACT ON PRESCRIBED FIRE

Well, all that is bad enough, but it is really getting personal with me now, because they are interfering with my prescribed burning! The main problem is fuel disruption. Feral hogs are roamers, and even one small sounder can impact a large area. Unless they have a concentrated food source such as in an agricultural situation, they pass through an area wallowing and rooting and then moving on, in large part because they have gleaned the area clean. It might be weeks or many months later, but they will eventually come back through.

It doesn't take a seasoned hunter to tell when wild pigs are around. Everywhere they go they leave swaths and scattered patches of bare ground, and this breaks up the continuity of the fine fuels I depend

on to carry my fires. I do all of my burning by hand and on-foot, dragging my drip torch in strips, or else lighting "spots" – relying on artfully-lit fires to carry over the rest of the site. But when these fires reach areas where hogs have trampled, rooted and wallowed in the leaves, grasses and other fine fuels that carry the fire, the fire goes out. And in each of those places where the fire goes out, undesirable woody species, both native and exotic, invade.

Given the climate of the Southeast, with long-growing seasons and abundant rainfall, it doesn't take long for a frequent fire-dependent ecosystem to fall apart – once effective fire is taken out of the equation, species composition and overall vegetative structure of the land rapidly change as ecological feedbacks are distorted -- and restoration becomes difficult, expensive and in some cases,



(Left) A “free-range” fire in the Southeast, prescribed, managed and lit by the author on private land in South Carolina to restore rare and endemic and other plant and wildlife species in the longleaf pine biome – and burning freely, in a way not possible when fuels are disrupted by feral pigs.



(Right) Controlled burn consuming longleaf pine straw and pyrophytic wiregrass (*Aristida stricta*) in the North Carolina Sandhills. Wiregrass is a volatile, iconic, keystone species crucial in “carrying fire” on millions of acres of firelands in Southeastern North America. A long-lived perennial, it requires fire to persist, and growing season fire to reproduce well. A clump of this bunchgrass may live longer than the oldest tree in this ecosystem – ground disturbance (including that by hogs) and fire suppression are the biggest threats it faces. The fire it carries is key to this “grass stage” longleaf which will be invigorated after fire scorches or consumes most of its needles. The little tree will begin putting on lush regrowth a few days after the fire, and any brownspot needle blight pathogens, which can cause fungal disease in small longleaf, will be killed. Photo: Brady Beck

impractical. With limited resources, I sometimes end up having to reallocate my energy to other areas. Or switching to herbicide or mechanical applications to manage vegetation. Which is a lot more expensive – and a lot less fun! Plus, fire has certain benefits that chemical and mechanical operations cannot provide, such as rapid nutrient recycling, stimulation of plant reproduction and removal of fuels.

MANAGING INVASIVE HOGS

Many land managers shoot every hog they can in the course of their work, and year-round we actively hunt them over bait and with dogs, and we trap them. But even in places where we intensively do these things, these invasive swine persist. Feral swine populations are extremely difficult to extirpate, and in situations where this can be done, they will re-infest an area if there are nearby source populations. One positive aspect of this responsibility is that wild pigs are quite tasty, although mature boars tend to be rank and pretty much not fitten to eat.

Many, probably most, introduced species are not invasive, requiring nurturing to persist and thrive, and much of the world's food comes from plants growing far from their native land, but we have been far too careless with the way we move species around. Now and then, one comes along and reminds us of our folly. The fungal blight that wiped out the American chestnut is one of the worst cultural, ecological and economic tragedies of North America. The Cherokee and other First Nations people once burned the woods in fall to expose the chestnuts and make gathering them easier, a practice later followed by European settlers.

The global threat to native biodiversity by invasive species is second only to human-caused habitat destruction. Tim Flannery and others have described the problems with invasive, exotic species in Australia, and there are not many, if any, places on the face of the earth where introduced plants and animals and microbes and fungi are not creating havoc. Some of the most hazardous fuels in the wild, rural and urban environments, species such as cogongrass, are non-natives.

But all is not woe. Increasingly in papers and presentations from IAWF and beyond, we are learning of ways to deal with invasive plant species in a fire context – how to limit their spread (e.g. by cleaning equipment before transporting it from infested areas), how to control them (herbicides are now much more selective and biodegradable), how to deal with them as fuels –

overall, how to reduce their threat to public safety, and to lessen their ecological, economic and cultural impacts. Addressing these issues may well turn out to be one of the major wildland fire research and management challenges of the future.

To amplify but not exaggerate an old adage – when it comes to some introduced species, an ounce of prevention is worth countless tons of quasi-cure! So, as we figure out how to deal with “what we got” – let's be careful what we move around!

FOR MORE INFORMATION

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ABOUT THE AUTHOR

Johnny Stowe is a forester and wildlife biologist who lights and writes about fire, having first started lighting controlled burns under the tutelage of his elders over half-a-century ago. He has managed heritage preserves with prescribed fire for the South Carolina Department of Natural Resources for 24 years. He joined the IAWF board in 2019.

A US firefighter's lessons from Australia's Black Summer

Looking across the Pacific for ideas to help increase diversity and workforce flexibility in the United States -- reflections from a US firefighter on his return from Australia's 2019 fire season

BY MARCUS CORNWELL

The thousand yard stare. The grumpy faces huddled around a bitter coffee pot at 5:30 AM after getting 6 hours of sleep or less. The smell of a week's worth of work still clinging to my body because who has time for a shower. Eat, sleep, hygiene. These are my orders of priority when I'm in survival mode in the middle of dirty August, hunkered down on some campaign fire in the Northern Rockies, having already faced months of fire season with only a handful of days off and no foreseeable end in sight.

A funny thing occurred to me about three weeks into a month-long deployment to Victoria, Australia this last fire season. The firefighters from Victoria, including the Forest Fire Management Victoria folks had been working the Tambo Valley Complex for 90 days, when a lightning storm lit up the Great Divide on November 21. Some of them had even had deployments to New South Wales to help with their devastating fire season prior to November. Despite all this I didn't see disgruntled and burned out firefighters talking about their Division Group Supervisors (DIVS) not signing for 16-hour work days, or the classic, having to show an unpaid meal break despite knowing you are working the whole time. The complex on which we were working had transitioned from suppression efforts to rehabilitation, and most locals had completed four or five rotations on this fire alone. I could just imagine my disturbed hotshots, facing the same fire-ground months on end and now being asked to cut sticks for the chipper. Heads would be spinning like a horror movie and the complaining would be non-stop.

Sure, I could go on and on about differences and similarities between the State of Victoria and United States (US) fire management approaches to wildland fire or the severity and size of wildfires I saw, but what began to intrigue me was their approach to work life balance. After 24 years with the US Forest Service I have an appreciation for the intricacies of fatigue management, retention, morale, and diversity. Maybe it was the new disc in my back between C5 and C6 that finally straightened me up and reduced my pain enough to realize I hadn't had a summer vacation in twenty years. Or the fact that our hiring certificates are shrinking and our remote duty station positions are going unfilled. Twenty years ago a GS-3 wage on a hotshot crew was a decent introduction to what fire money could look like after six months of complete sacrifice, but after recently looking at a GS pay scale chart, I realized the GS-3 wage had only changed a couple of dollars in twenty years and is now below minimum wage in a lot of places.

WHAT WAS DIFFERENT?

I started my questioning with one of our assigned Australian liaisons. I wondered about the remarkable number of women, both on the field going "g-wagons" (the new Forest Fire Management Victoria fire truck) as well as on the incident management teams. He told me not long ago there was a recognition they needed to make a change as they lacked diversity and were losing the ongoing battle of retention. Now there was a conscious effort to allow more time with family and negotiate part-time work schedules. The local operations officer for the fire mentioned how one of the female Incident Controller (commander in US jargon) trainees would work four days at a time and then head home to family until she could come out again.

I can already see heads spinning, as even the Incident Command team from the United States kept going on about how difficult it was for them to handle the transitions every 5 to 7 days. Wait, "if you can't commit to a full 14 you're no good to me, where's your loyalty, your *esprit de corps* to get the job done?" Forest Fire Management Victoria's fire tours are 7 days in length counting travel. What! Five days of work! A sacrilege to the American working spirit! And then we have to replace you! Never! Back in my day, 21...blah...blah...no time limit...blah...blah...!

Those days are gone. Our military doesn't form up in Napoleonic lines to fire point blank at each other anymore; likewise we need to remain up-to-date with cultural and social shifts to be relevant. The senior leadership of the land management agencies are good at using buzz words like work-life balance and workforce planning while they themselves are in the office after dark getting that last email out or organizing a defense of the local mountains with the Wildland Fire Decision Support System against wildfire. We have yet to take meaningful steps to address what work-life balance actually means in real-world policy decisions besides platitudes from videos produced by senior leadership. Classic bureaucratic speak found the world over with limited substance or meaningful action. You want to address mental health? Have a listen and prepare to have your mind blown.

Relevant Today - What Works Down Under

First off, shift lengths and tours -14 not 16 hours. That's right, 14 is the standard long shift with 10 hours off to give enough time to call home, shower, drink a beer, oh wait, wrong country. But, you protest, that will cut my overtime by x number of hours! It's a travesty, a shame, a disgrace to our can do culture of working people into the ground! Oh but wait there's more - a rest period of 2 full days is

required between deployment comprising 7 consecutive days. How will I ever support my family cutting our hours like this? Well, if you work for the state of Victoria, you are adequately compensated for the sacrifice you actually make.

Hazard pay? The State of Victoria calls it “emergency field allowance” and they pay it on prescribed fires as well, because guess what, the hazards are very similar. Even logistics personnel get an increase in pay, the “emergency support allowance”, an acknowledgment of the sacrifice every single person makes.

Next up, the bread and butter of how most paid wildland firefighters actually support their family, overtime. You get paid for meal breaks and make double time for a majority of hours after base 8. What a novel idea. When you sit down in the poison oak to eat your soggy sandwich, helicopters flying overhead, and the next drainage over is going up like the Fourth of July, you are getting compensated for the 15 minutes you actually take with your radio on. After your normal 8 hours (7.6 in Victoria because they have a 38 hour work week-let’s not even go there now) you get time and a half for the first two hours, then double time for all your OT hours. And what about days off? Saturday, time and a half for the first two hours and then double time. Sunday, double time all day.

According to the Victorian Public Service Enterprise Agreement of 2016, you even get paid for standby or being on call for “immediate recall to work”. Compare this to our approach here in the federal system in the US. Think about duty officers in the US who tell their loved ones, “I have to remain in cell coverage all weekend and fairly close to town in case we get a fire.” Sure they might charge a two hour call back if they receive a call. However, if you worked Down Under (in Victoria) you would get a day rate of \$206.60 for the hours from 1000-1800 and \$122.30 for the hours from 1800-1000 for just being on call. If the communication requires further follow-up besides a phone call you get overtime. Australians pay their firefighters for the time that their employees sacrifice by being on call and within the parameters of a two-hour call back, a stipulation which I believe is in many US bargaining agreements for on-call work.

I’ve always wondered, especially as I finished my ICT3 task book, what incentive does the government provide for the added responsibility we take on above basic firefighter? We all know the seasoned GS-8 engine captain who is a DIVS on a team, working on their OPS2 or is ICT3. And then you see a GS-11 or 12 coming out on a put-together hand crew or as Task Force Leader (TFLD) making money hands over fist, with less responsibility and often less fireline experience. You guessed it, fellow fire professionals, if you worked for the State of Victoria you would be compensated on a sliding scale for the added



Marcus Cornwell cutting a hazard eucalyptus tree.



Crew at Nunniong Plain

responsibility you took on. The scale for 2019 was an extra \$1,102 for crew leaders, \$2,532 for Sector Commanders, \$2,532 for an Incident Controller Level 1 (which is similar to our Type 5 and 4 fires), up to \$6,604 for a Level 3 IC (again similar to our ICT1). To receive these annual payments you need to be available for 25 days of the year.

Wonder how we are going to address the growing crisis in our retention in remote duty locations as well and increasingly small applicant pools across the board? Pay them more of course. The State of Victoria provides increased incentives for folks working in remote duty locations. If you have dependents, the stipend increases to help cover the very real possibility of your partner not being able to find work. The Australia Workers Union (AWU) Field Staff Agreement of 2016, which pertains more towards the seasonal workforce, provides a retention bonus for returnees if they work three months. I could go on but I encourage you to read this document for yourself.

Where Do I Sign Up?

Where do I sign up, you might be asking yourself? Well, not so fast. You have to be able to drink short and long blacks (coffee) everywhere you go, enjoy a thin smear of vegemite on toast, understand the rules of footy and have a favorite team, stomach endless rounds of pots or schooners and be within hours of the coast and mountains. I know, pretty horrible.

All joking aside, I believe the professionals in the fire management service in the United States need to be asking these very thought-provoking questions and perhaps looking outside our borders for answers. How do we address the lack of diversity? Is it increased workforce flexibility so folks can go home to see their kids more than twice a month? The numbers of volunteers around the country are shrinking and our own hiring lists are getting smaller. How do we make wildland firefighting an attractive occupation and adequately compensate people for the irreparable harm we do to our bodies? My disc replacement aside, our own statistics from Missoula Technology and Development Center about the increased rates of cardiovascular disease should be alarming to our leadership but I haven't heard it mentioned once outside the fire offices. Well I'll tell you, money would be a start. Then our own kids and families will be supported when we die ten years younger than everyone else. Don't get me started on calling us firefighters which seems like King Arthur's sword stuck in the stone. Want to address first responders taking their own lives? After having an old friend — with whom I shared the chainsaw tank for tank and drank beer under the clear New Mexico stars — kill himself, I find that our institutional response is not enough. For many in the field and at their emotional worst, hotlines don't work. Treating the symptoms generically with peer

groups and more training doesn't cut it. Try getting at the root cause of the stress: over work, under compensation, and a poor leadership approach towards fire management professionals and the stress we go through. I actually heard a ranger say "I don't want to hear anymore about firefighters and stress, you don't know what we all go through." Honestly, I don't know, but I can tell you what six months of chewing dust, sleeping on the ground, eating poorly and sleeping worse does to the mental frame of mind after 20 years. That doesn't include the stress of keeping 20 fire-eating hotshots safe for thousands of hours while performing arduous labor in a high risk and dynamic work environment. Firefighter safety is the number one priority, isn't it?

Respect, Interaction across All Levels of Fire Management

The people in Australia were amazing and my time over there invaluable. When I joked with my "offsider" about what we would remember most, it wasn't the food, or beautiful country, delicious country bakeries or kangaroos for me. It was the way in which all levels of their fire management interacted and treated each other with respect. The IC would often be joking around with the fireline crew-members, while there was a genuine open door feeling between the operators and the team. You could feel the palpable difference in Swift's Creek base camp when different international teams were on rotation.

It's far past time we stand up for the women and men who make up our wildland fire workforce and provide them with adequate pay and benefits commensurate with the sacrifices they make. It's time we support the people who sacrifice family, summers, and sometimes their life to protect the very things we find valuable as Americans -- human life, personal property and the natural resources that provide our drinking water, timber, safe havens for wildlife, and places to enjoy nature outside the built environment. Even during our current global pandemic of COVID-19, it is the women and men in the wildland fire service who remain on duty and ready to respond as needed to support the nation in a time of need. The State of Victoria's policies and fire business practices reflect their deeper cultural beliefs about Duty, Respect and Integrity. I'm not sure I can say the same for our policies in the United States. Good on you, mate, for leading the way.

AND REMEMBER THE VOLUNTEERS

I would be remiss if I failed to mention the amazing volunteer service that exists across Australia, including the Rural Fire Service in New South Wales and the Country Fire Authority in Victoria. These selfless volunteers put their lives on hold to assist their fellow citizens in need. While they have paid members, they are largely a volunteer workforce that respond to fire emergencies. On the fireline, whether down under or in the United States, we need everyone. And just as it's time to address support for our full-time firefighters, perhaps it's time to do the same for emergency volunteers worldwide. Tax incentives? A topic for another time.



ABOUT THE AUTHOR

Marcus Cornwell has been with the US Forest Service since 1997 when he started as a climbing ranger at Mt. St. Helens on the Gifford Pinchot National Forest in Washington. He's worked on four different hotshot crews in two different regions and is currently working on the Gila National Forest as a district fire management officer.

Marcus Cornwell cares for a baby wombat while on fire assignment in Victoria, Australia.



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THAT OTHER INTERFACE

*A reflection on the human interface – the wildest fence we may work within our fire profession
– from a scientist who seeks to connect across the divides in Australia.*

BY HAMISH CLARKE

Australia is on fire, state and federal governments are under pressure, debates over risk mitigation are raging and the elephant of climate change is about to knock down the walls of the room it has been hiding in for the last few decades in an attempt to flee the oncoming fire front. Which is to say, there's never been a more salient time to work at the science-policy interface. Having stood on both sides of that fence, I can share a few observations which may be relevant.

When I worked as a government scientist, I frequently wrestled with the role of public sector science. Officially it was to provide the evidence base for policy. Unofficially we were couriers, discovering scientific answers (or ferreting out others' discoveries) and then dutifully delivering them to management and policymakers. There was respect for the special powers we scientists had that were unavailable to other public servants, especially the magic dust of peer-reviewed publications. Yet there was also a clear line over which we could not cross. Because we weren't great communicators, because we liked to complicate things with words like unless and except, perhaps most of all because we didn't understand the many other non-scientific factors at play in policy decisions, we were

generally seated at the kids' table, away from the decision-making adults in the room.

This was somewhat unsatisfactory as I was interested in decisions and practical results. I wanted to know what happened before and after science. This led me down the strange path of policy studies, where I encountered the inputs-outputs-outcomes framework. It argued that many government strategies focus on inputs and outputs – dollars spent, reports written, roads built etc. – rather than the actual result of all those efforts: the outcome. The outcome is the reason for policy, the reason for government, the change that we public servants are striving to achieve. The problem is not so much that government departments do not set outcomes (believe me, they do – I've read the corporate plans). It is that the outcomes are often exceptionally vague and have little practical relation to the work done within departments.

For example, at one stage the long-term goal of my division was to minimize the impacts of climate change in local communities. This sounds terrific, but putting it into practice is hard. It requires understanding and quantifying climate change impacts (on all people? on all things people care about?) in (all?) local communities,

understanding how these impacts might be reduced, and then presumably doing whatever is necessary to bring each of these impacts to their absolute minimum.

Overarching goals are often vague and dream-like, but the goal at the next tier down had a similar flavor. The five-year end of program outcome was that government, businesses and the community are building resilience to climate change. It makes sense that before impacts can be minimized, resilience must first be built. In contrast to the first goal, which set a rather high standard, this one suggested that some action (any action? no matter how small?) was enough for this outcome to be achieved. There was always a point in these plans where these vague and universal outcomes switched abruptly to the completion of individual projects (outputs).

Defining outcomes is hard, Australia National University (ANU) Professor of Strategic Studies Hugh White once told me. “One has to be absolutely ruthless in assessing the relationship between outcomes and outputs. If you cannot establish a very direct causal link between the outcomes you set and the outputs you propose, then the outputs have not been defined well enough.” He said that the most common failings were defining as outcomes things the organisation/organization couldn’t achieve, and defining outputs that could not actually achieve the outcomes. Brash and naïve, I decided to rewrite the entire set of corporate goals in a way that met these lofty ideals. They made a bit more sense to me but were not received with enthusiasm by my colleagues in policy.

I slunk back to the kids’ table, where a job ad came across my desk. It was in academia researching bushfires, and the primary partners were my old colleagues in government and the fire management agencies. I now had an opportunity to peer across the science policy interface from the other side of the fence.

Unlike in government, there was little doubt about the boundaries between science and policy making. Academics may strive to work closely with “end users”, but there are no illusions they have any say in management decisions. On the other hand, we have something that public servants, and especially public sector scientists, do not: an ability to speak freely and widely about our research and its implications, thus influencing those same policy decisions after all. It has also neatly flipped the procurer-consultant paradigm from my time in government. Previously, external consultants may have been uncharitably typecast as greedy, overpromising and underdelivering hacks. Now, as an academic, the uncharitable stereotype is of public sector procurers as confused, unrealistic and incompetent hacks.

Working on a few projects from within academia has deepened my sense of the fence. Partners in government and fire management occasionally struggle to separate the concrete contractual obligations of a project from the general sense that university scientists are there to do whatever the agency wants them to do. I suppose this is not wildly different from the expectation in the community that public servants are there to do whatever the people want them to. The outcomes framework is now being visited upon academics, who are increasingly encouraged to provide hard evidence of their societal impact beyond dusty journals and conferences. Meanwhile, even as public servants struggle with a complex array of forces pushing them in every direction, the public service and its political masters remain largely immune to serious attempts to formally measure the

outcomes of their work, whether by the goals they profess or some other standard.

Sadly, my time on both sides has not delivered me an overarching theory or well-defined outcome for working at the science policy interface. It has given me a useful rule of thumb, however, which is that relationships are critical. Major initiatives which have undoubtedly helped to transform the public understanding of climate change impacts in New South Wales had their seeds in relationships, in repeat meetings, phone calls, coffees and lunches, road trips and hallway strolls. My manager at the time could have rebranded himself as a relationship guru if he wanted – he charmed, he told tall stories, he connected with people. He left in one of many restructures, his expertise and relationships, like so many others, lost to the department in the conceit that what mattered were job descriptions and capability frameworks, not individual people.

On the other side of the fence, when the Rural Fire Service Commissioner opened the NSW Bushfire Risk Management Research Hub, a multimillion dollar partnership between academia and government, he spoke not just of the daunting challenges of contemporary fire management and the world-leading research of the institutions involved. He spoke as well about the peace of mind he got from being able to pick up the phone and just chat with the Hub director (my boss at university) whenever he needed to. Although I haven’t been in academia as long, I have no doubt that research projects on this side of the fence rise and fall not just on the strength of their science or the soundness of their policy goals, but on the connections made and not made between human beings.

I can’t say that one side of the fence is better, or more effective, or fulfilling than the other. I’d like to see more of us work both sides. It makes it easier to see where people are coming from. And even as some are working to break down silos and enable cross-sector mobility, there is something to be said for a nice, solid fence. Good fences establish useful boundaries and, so long as they aren’t too tall or electrified, can even make good neighbors, as Robert Frost once said. As for me, I like wide fences. Sitting on the fence isn’t always comfortable or popular, but the views are great and there’s no better way to see both sides.



HAMISH CLARKE is a research fellow at the Centre for Environmental Risk Management of Bushfires, University of Wollongong, Australia. Recent research includes *Climate change effects on the frequency, seasonality and interannual variability of suitable prescribed burning weather conditions in south-eastern Australia*. Published in 2019 in *Agricultural and Forest Meteorology*, the research highlights that while “Changes in the seasonality of burn windows are likely ... overall decreases are not. Results are highly sensitive to how weather conditions are defined [and] may help fire managers assess their exposure to changes in burn windows.

WORDS ON FIRE

A conversation on a mentoring tutorial

In response to the IAWF appeal for mentors, Steve Pyne, an emeritus professor at Arizona State University, proposed to teach writing. We connected him with Hamish Clarke, Centre for Environmental Risk Management of Bushfires, University of Wollongong, Australia. Here's their report on their mentoring process.

Q: How did you come to this project?

Steve: I had taught nonfiction writing as my contribution to graduate students at ASU, and did a Research and Conference course with Stephen Fillmore, then a distance student with the University of Idaho. I was thinking about ways I might adapt that experience when I saw the IAWF mentoring program.

Hamish: I saw a call from the IAWF for participants in their mentoring program. It seemed like a good opportunity to connect with and learn from experienced folks in wildfire management and research. To my surprise – and delight – I then got a short note asking if anyone was interested in receiving writing mentoring from none other than Stephen Pyne. I love writing and have been trying to do more – this was an offer I couldn't refuse.

Q: So how did it go?

Hamish: Great! Steve had a syllabus of sorts, so we had some structure to work with. I was keen as mustard but only had small windows of time to do readings and writing tasks. Much to my relief, Steve was unfailingly tolerant of my sometimes half-baked assignments, giving constructive feedback and general comradery.

Steve: It had a slightly rocky start. The time difference, and the holidays, made scheduling tricky. We wound up doing one meeting through the wifi of a garage in Penrith.

But the real issue was that I needed to be explicit about what the project is and isn't. It's a limited exercise – 11 units in all. It's about nonfiction writing on fire for a more general public than scientific papers can reach. Basically, it's a sampler of literary techniques that writers can explore and decide which they are comfortable with.

Q: How are the sessions organized?

Steve: All great writers are great readers, so we open with a few assigned readings intended to highlight some element of craft but also to teach how to read like a writer.

The core, though, is an assignment that features some type of writing – character profiles, settings, ideas and institutions, comparisons and contrasts, figures of speech, openings and closings, narrative. Hamish sends me his text two days before we meet. I make comments and send them to him the next day. We discuss over Skype. I've learned I don't have a great phone persona; I need to see some body language to converse well.

Hamish: We met once a week by Skype, with me offering thoughts on the readings for that week and then discussing Steve's feedback on my writing task. Each week's topic is different – openings and closings, metaphors, ideas and institutions and so on – with four or five short readings tailored to the topic. Occasionally the sessions would descend into time delay farce as we spoke over the top of each other, but for the most part they worked well.

Q: What was the best part?

Hamish: I'll give a two-part answer. The first was getting a masterclass in nonfiction writing from one of the world's leading exponents of the craft. I consider myself a good writer, so it was humbling but incredibly useful to discover that there were hard limits to how far I could get with my intuitive style. In short, Steve popped the hood and showed me how writing works from the inside out. The other best part was getting to spend some (screen) time with Steve. He was generous with his time and expertise, tolerant of my logistical and linguistic limitations and encouraging. I intend to pester Steve for some time to come.

Steve: I got to know Hamish a bit. He came with a mature writing style, so we didn't have to fumble with grammar and topic sentences. His wry sense of humor helped keep us on message. It was also fun to reconnect with Australia – we even timed it with an outbreak of megafires – though that made me realize all my reading examples were American. I hadn't imagined doing this with someone outside the U.S.

And, Hamish – follow-up is part of the package. Consider it an extended warranty.

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Q: Suggestions for the future? Or advice for future mentees?



Steve: I've rewritten the syllabus, which meant rethinking what the program can and can't do. Probably I should ask for a statement or a writing sample from prospective mentees so I can better match what I can do with what they want. It's not a class – the work isn't graded. But the project requires consistent commitment. Part of what the course teaches is that you write when you can, not when you feel like it. I'd like to offer it twice a year, avoiding both (the northern hemisphere) fire season and the holidays. Say, February to April, and September to November.



Hamish: My boss (leading wildfire researcher Professor Ross Bradstock) once quipped that when asked at parties what he did, he would say "I read and write." While there's more to science than that, it's an incredibly important part. I'd encourage anyone serious about improving their writing craft to take up this offer, should it arise again. I would also encourage future mentees to read the assigned tasks closely – I kept writing pieces that had little to do with the topic at hand!

Q: Any final thoughts?



Hamish: In one of my final pieces (and one of many botched closings – it's hard to write a good ending!) I ruminated on the importance of relationships in bridging the science policy divide. More broadly, I believe one of the solutions to our various modern predicaments is to bring different parts of society closer together. For me that means deepening the links between science and society. Becoming a mentee or mentor is one way to build new connections and do your part in making the world a better place.



Steve: Well, it's not your usual mentoring. It does, however, offer a craft that some members of the fire community will find useful. We're not a book culture, or even a writing culture, but it would be good to have us speak for ourselves rather than rely on journalists or novelists or others with their own agendas. A lot of fire folks have something they want to say. A little craft can help them say it, which lets the real thing come through in their writing.

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