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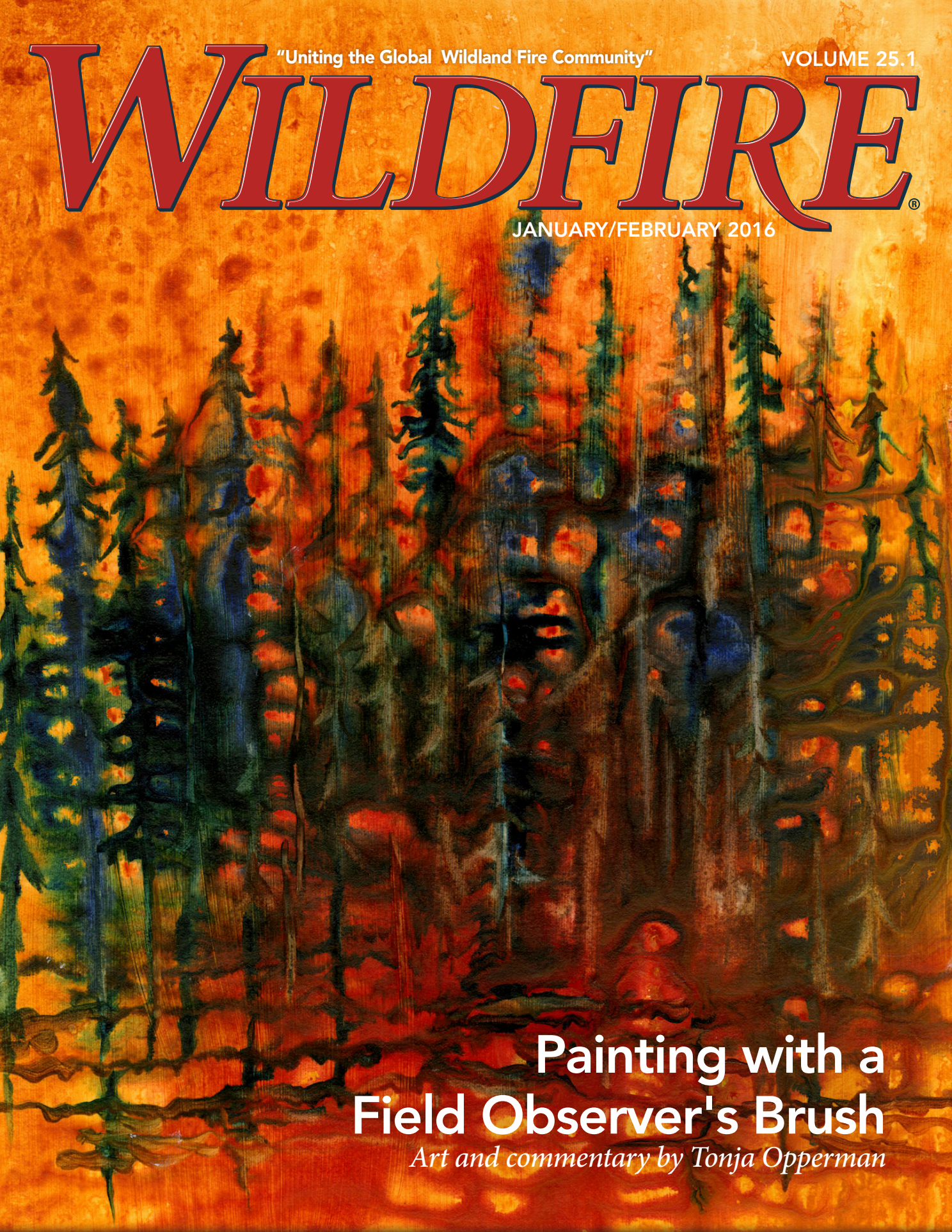

Painting with a Field Observer's Brush

Art and commentary by Tonja Opperman

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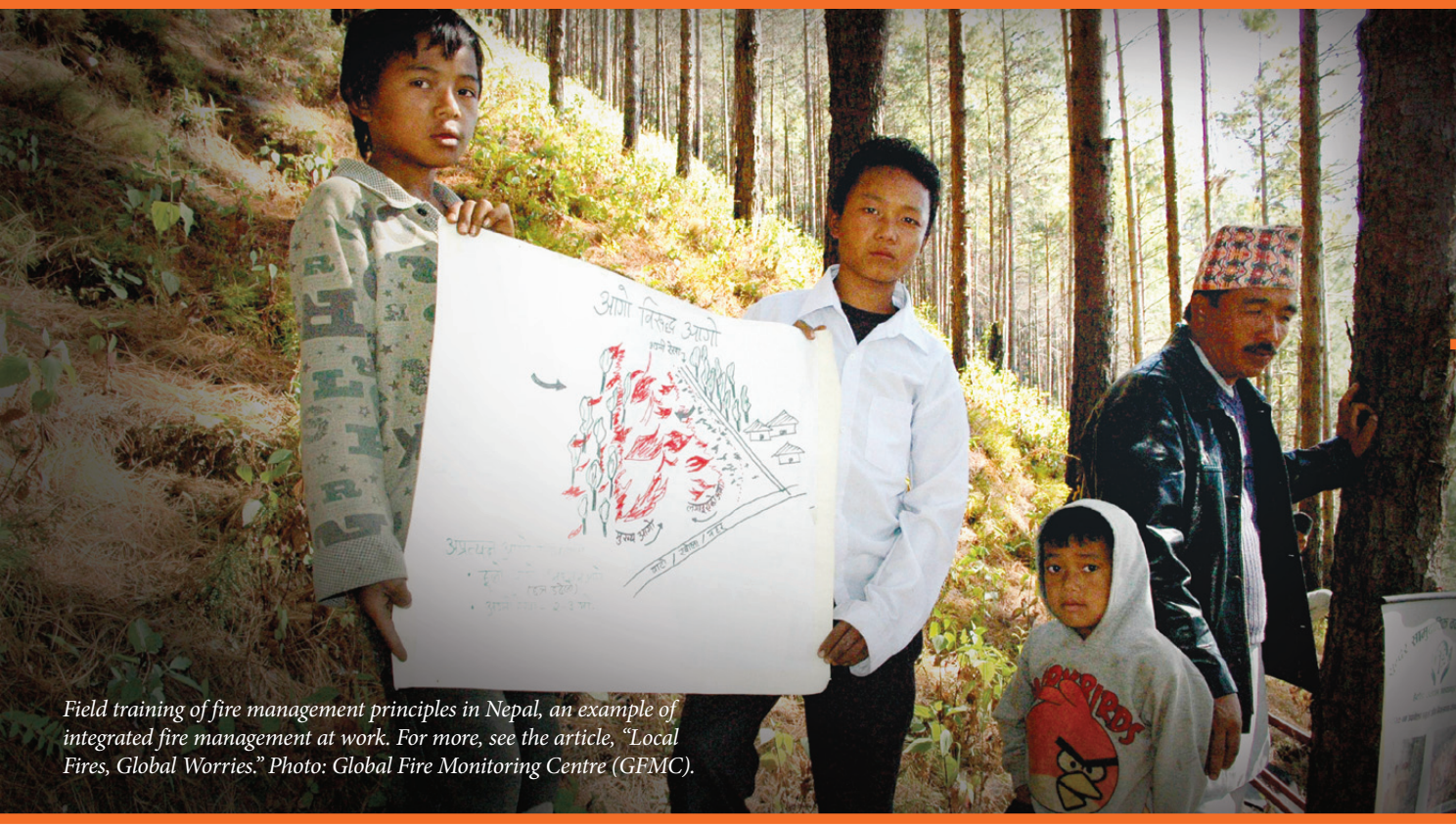

Field training of fire management principles in Nepal, an example of integrated fire management at work. For more, see the article, "Local Fires, Global Worries." Photo: Global Fire Monitoring Centre (GFMC).

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Painting by Tonja Opperman.

LOCAL FIRES, GLOBAL WORRIES

At the 6th International Wildland Fire Conference this past October, the talk focused on a year of devastating fires (even as Indonesia burned) and on local, regional and global actions for managing fire in the Pyrocene. Writer Lindon Pronto and a range of experts offer insights on how this key global conference helped to influence the Paris climate talks and may guide us into an era of integrated fire management.

An example of integrated fire management: prescribed burning with the Xerente on indigenous land in Brazil. Photo: GFMC.

By Lindon Pronto

1. Welcome to the Pyrocene

The old proverb—fire makes a good servant but a bad master—has become too literal a guiding doctrine, for too long. This understanding characterizes fire entirely within the context of how humans relate to fire, while neglecting fires' innate role within the natural environment, as an ancient earthly element, much older and perhaps much wiser than we human stewards, users, and fighters of fire. With or without us, fire will continue to shape our landscapes.

Historian Stephen Pyne captures this truth well, casting fire as a shape shifter, a creature of its context. Fire may share a singular chemical process, but exists as pluralistic phenomena varying greatly in ecological and cultural contexts throughout the world. Pyne conjures up politics to describe fire: while we may acknowledge fire as having global implications, ultimately all fires are local.

Similarly, all fire "managers" are local. Viewing fire management as an international undertaking may raise some questions. Be this especially true if the words *concerted, international, fire management,* and *efforts* appear in the same sentence. However, as we know from

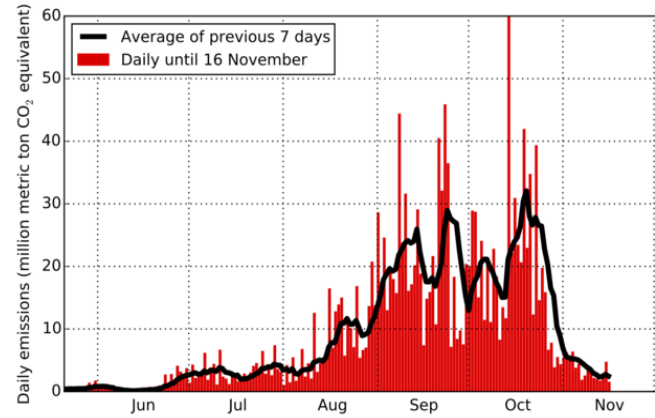
our efforts locally, fire does not observe jurisdictions or national borders. To preface a discussion on international fire management politics and concerted action, a few of the contemporary impacts vegetation fires have across the globe, should be highlighted.

This past year wasn't just a "bad" fire season for the Northwestern and Western United States and Canada, but devastating fire episodes hit the Mediterranean states, Russia, Northeastern China, and many Eurasian states as well; in Mongolia a handful of fires devoured nearly 13.6 million acres in the second half of April. Fires burned hot on the African continent, bringing devastation to Zimbabwe and the Democratic Republic of Congo, among others. Later, Indonesia caught the world's attention with local fire conditions escalating to a global dimension. Australia is suffering a deadly fire season. It is remarkable that such an enormous fire presence is experienced in all parts of the globe, virtually all at once.

Historically, an average of about 600 million hectares of vegetated lands burn—that's over 1.5 billion acres, or roughly the amount of combined forest, grasslands and managed parklands in the United States (1). Worldwide, fires are trending toward longer burning periods, heightened fire severity, greater area burned and increased (mostly human-caused) frequency. These factors contribute to more damaging environmental impacts, increasing socio-economic costs including greater threats to human health and security, and higher shares of emissions into the atmosphere.

As Pyne notes, since the major evolutionary advancement of the Industrial Revolution, humans have induced irreversible climatic changes by "burning the lithic landscape"— fossil fuels. He claims we have entered into the Pyrocene—an era characterized by burning matter both above and below the earth's surface. His theory is supported by one of the world's leading climate scientists Schellnhuber –principle advocate of the 2 Degrees Celsius Limit theory – and who in his latest global analysis "Self-Immolation" draws a blunt scenario of the Weltenbrand (planetary blaze) as a consequence of burning-driven climate change (2).

Every year, global vegetation fire emissions typically constitute one-third of total releases of carbon dioxide, the main heat-trapping emission contributing to climate change (3). For example, fires burning in Indonesia alone, during the El Niño dry season in I997 and 1998 produced an equivalent of up to 40% of the global gross carbon dioxide (CO_2) emissions from fossil fuels for that year (4).



Daily fire emissions from Indonesia (estimated) for 2015, show that on many days the rate exceeds that of fossil fuel emissions in the US (roughly 15 million ton CO2 per day).

Source: Global Fire Emissions Database. http://www.globalfiredata.org/updates.html.

According to the Global Fire Emissions Database (GFED), the recurrent Indonesian crisis of 2015 often put up daily CO_2 amounts higher than the entire U.S. industrial economy, and two months of burning nearly doubled Germany's yearly carbon output from fossil fuels. These emissions do more than just contribute to climate change, they are literally killing people.

Some models indicate that the annual average number of premature deaths resulting from vegetation fire smoke exposure, range between 180,000 and 339,000 (5, 6). During previous severe El Niño years like this one, that global average spiked to some 530,000 deaths (6). Documented this year alone, there have already been over 600,000 hospitalizations according to Indonesia's National Disaster Mitigation Agency (BNPB).

Evidently, although we are just beginning to understand the consequences of fire and smoke on human health, we have been impacted since human-harnessed fire was first used for heating and cooking. This is still the case for much of the earth's population. Sustainable Energy For All (a United Nations initiative) reports that over 1 billion people live without electricity and 4.3 million people die from diseases caused by indoor smoke from fires to cook and heat, and oil lamps and candles to light.

Today, most "keepers" of fire are land management agencies, forest and fire managers, and tangibly the boots on the ground: a line of sweat-stained yellow shirts pounding out a break in mineral soil or taking a stand with a leaky drip-torch. Men and women of the fire management community,

whether they know it or not, are on the front lines of climate change—if only the solution was as straightforward as anchor and flank, or going direct.

Comparing the human and ecological balance of past fires is important for remembering we have coexisted in an ecologically "sustainable" way. However, these understandings have limited usefulness as doctrine for understanding and managing fire in the future. By nature's perfect design, fire does not degrade the landscape; yet human wants and needs have altered and degraded the global ecology extensively, so that the long-term consequences of both our actions and inactions leave us questioning whether Nature or Man masters fire. There was a time in American history, when either by arrogance or ignorance Man thought he controlled fire—evidently Man was wrong, and this human-fire relationship was little more complex.

The big question then, is how to manage fire to support the long-term biological integrity of a particular landscape, while still meeting diverse human needs? Our big challenge is answering this question while considering that in just a handful of generations humans have completely altered fire's natural habitat. We have fragmented and degraded ecosystems, drained or dried out the land, excluded fire from its native spaces, or introduced it to where it doesn't belong. If fire were an animal, it would be cornered, angry, and trying to find new habitat.

The fire we face today is undeniably fierce and destructive. It spreads in patterns and at rates never seen before. Most alarmingly, through human ambivalence, fire is colonizing new habitats through amplifying positive feedback cycles in sensitive areas. These sensitive ecosystems, primarily the Arctic tundra (7), peatlands (3), and tropical rain forests (8, 9, 10), harbor ancient highly concentrated carbon stocks, which are rapidly released during fire events (like in Indonesia). Fire is not a natural process here, and it has devastating effects, locally and globally.

Expanding infrastructure, industrial activities, human exclusion and suppression of fire among other factors, have hindered fire—preventing it from fulfilling its ecological function. Clearly, fire has become an obstacle to humans too. We see this clash—this human environmental conflict—most poignantly in the wildland urban interface (WUI) or where other human values become threatened. Enter politics.

2. A New Fire Management Paradigm

While fire has been a part of culture for thousands of years, it has only been a century that we have attempted to mix fire with politics. Any fire manager who must reconcile these two in say—the Southern California WUI or in border crossing fires between hostile countries—understands this nightmare. These present-day complexities suggest that a multi-level governance approach is necessary to ensure that fire management policies and practices are appropriately fitted to address everything from local firefighter and public safety, regional border-crossing fires, large-scale smoke episodes, radioactive fallout from contaminated areas scorched by fire, to impacts of fire emissions on the global atmosphere.

A management structure must be at least as complex as the system it seeks to manage. Yet bureaucracy tends to compartmentalize crosscutting issues, like the common disconnect between prevention and suppression. Communication and collaboration between multiple sectors, stakeholders, and agency departments is precisely what is needed to holistically address fire management. In broader terms, a horizontal cross-sectorial and multi-level approach, which includes top-down structures as well as local-level (bottom-up) participation, is the aim of an evolving new paradigm of fire management. Integrated Fire Management (IFM), as it has become known, is a top priority identified by the international community. An important component of IFM is community participation, which applies equally to the Californian WUI as it does to remote savanna communities in Sub-Sahara Africa, Central Brazil, Mongolia or Northern Australia.

Community-led fire management decentralizes authority in areas were centralized management structures would be ineffectual, inefficient, or both. It is also social by nature by being rooted in the cultural interaction and use of fire; it incorporates indigenous knowledge and thousands of years of human experience—the most time-tested form of fire management. Civilizations evolved with fire, learning its benign use, balanced application and continuous management.

Volunteer fire groups, such as in Community Asunsu No.1 (Dormaa Ahenkrom), have significantly contributed to the reduction of wildfires in the country. Photo: GFMC.

According to Val Charlton, managing director of Kishugu, South Africa's largest fire organization, "we should be paying serious attention to indigenous peoples, indigenous needs in the landscape and fire in the context of ecosystem integrity and long term functioning." This approach of IFM, inclusive of participatory methods represents technical fire management principles of the future, joined with intuitive and sustainable fire management principles of the past.

Integrated Fire Management must address challenges not only rooted in current and previous management structures, but also particularly in well-established cultural norms. The most problematic practice is the use of fire as a land conversion tool. Two more 21st century buzz-concepts are aimed at addressing another level of complexity for socio-economic, cultural, and political drivers of fire problems: knowledge transfer and capacity building.

Johann Georg Goldammer, Director of the Global Fire Monitoring Center and coordinator of the UNISDR Global Wildland Fire Network, cites Nepal and Ghana as notable examples of capacity building and knowledge transfer in fire management. In what he terms effective horizontal fire management, communities learn from and help each other address local wildfire challenges, sometimes independent of state or national government help.

Lucy Amissah, a Research Scientist at the CSIR-Forestry Research Institute of Ghana, explains further how this looks at the community level:

> *[In Ghana] there is currently a network of village fire volunteer groups in fire-prone areas that focus on early fire detection, fire suppression activities and the enforcement of burning bans during the fire season; they also supervise burning of slash during the farming season to prevent agricultural fires from getting out of control.*

Community fire management training in Mozambique. Photo: GFMC.

Amissah notes that skills are transferred from one community to another, especially from neighboring communities whose good fire management practices have yielded benefits, such as a marked reduction in the occurrence of damaging wildfires. During skill-transfer training meetings, young people are encouraged to join the aging fire volunteer groups to sustain fire management at the community level.

In Nepal, one of the least developed and economically most disadvantaged nations in the world, Sundar Sharma, leader of the South Asia Wildland Fire Network, has demonstrated that even the poorest of all—the remote mountain communities—are among the most efficient keepers of fire:

> *Our local communities have fully understood the benefit of effective fire prevention within and around the community forests. In the Himalayas, forest resources are becoming scarce, and the impacts of climate change can already be seen. Increasing temperatures, more frequent droughts, dwindling glaciers and snow cover make our mountain ecosystems more vulnerable to wildfires—and this is why the local communities are taking responsibility.*

In Nepal, a student of fire demonstrates firefighting techniques with a backpack water pump. Photo: GFMC.

Lara Steil, Interagency Fire Management Coordinator for Prevfogo, the fire management arm of the Brazilian Ministry for Environment (IBAMA), offers a different

Fire managers gather traditional indigenous knowledge of fire use from villagers in Brazil. Photo: GFMC.

example of IFM functioning at the intersection of top-down and community-led fire management for protected areas in Brazil. These include conservation units, indigenous lands, and territories of traditional people. As Steil observes:

> *We have adopted a participatory approach to study indigenous traditional knowledge on fire use and develop a prescribed-burning plan. The aim was to meet local land management objectives, promote flowering and fruiting and pasture management, reduce fuel loads, establish vegetation mosaics, and minimize the incidence of high-intensity wildfires in the late dry season, thereby decreasing excessive greenhouse gas emissions.*

From Ghana to Brazil, IFM promotes the benign use of fire for meeting ecological and human needs, while in turn creating awareness for dangerous burning conditions and enhancing capacity to contain escaped burns. The results include a reduction in livestock and human casualties, fewer dwellings and agricultural crops lost to fire; and success in limiting the occurrence and impact of large uncontrolled fires that release excessive amounts of emissions. As many traditional uses of fire are ecologically appropriate and beneficial, returning trust and responsibility [back] to communities to manage their landscapes accordingly, is (ironically) being hailed as a new effective way forward.

Charlton adds, "If we are to tackle this messy area head-on and make a real difference in mitigating unwanted damaging fire, we have a serious need for fuel reduction and prescribed burning at landscape level, globally." After all, maintaining an ecologically appropriate balance of fire within the landscape is a task most suited for local fire managers and indigenous communities intimately familiar with sustainably managing their land over the long-term. It will take a well-crafted combination of IFM principles, educational efforts, and trained, capable communities to address contemporary challenges, like developing alternatives to fire as a land-use change method.

3. The 6th International Wildland Fire Conference

Broadly speaking, fire now poses a common threat to environmental stability, economic security, human health

A former Soviet tank has been retrofitted with various firing devices and suppression capabilities, including a 600 gallon water tank to safely carry out prescribed burning on former military terrain contaminated by unexploded ordnance in Teltow-Flaeming County, Germany. The use of fire has contributed to shape landscape patterns of high ecological and cultural diversity in Germany and elsewhere. Armored fire suppression technology, with offsite incident management via drone, help to decontaminate dangerous areas. Photo: GFMC

and safety—but internationally it still lacks effective political recognition and legitimization inside and across borders. This is why government officials, professionals and experts have been convening for 25 years as an international fire management community to assess challenges at multiple governance levels and encourage a deeper understanding of contemporary fire management complexities.

At a crossroads of old ways and new approaches in the human experiment with fire, *"Fire of the Past, Fire in Future"* was the banner bringing participants from 73 countries and international organizations together at the *6th International Wildland Fire Conference,* held in South Korea in October 2015. The conference series originated in Boston in 1989 traveled to Canada in 1997, and has since been held every four years in Australia, Spain, South Africa, and finally in Asia this year. Brazil will host next. Evidenced by this ever-expanding series, both acknowledging and acting on the global implications of vegetation fires has become an important contribution to understanding fire outside of its local-only context.

The international wildland fire community recognizes the sense in establishing a coherent global fire strategy. The envisaged approach is a flexible, scientifically-informed, cooperative, concerted one that combines regulatory, informational, economic and organizational instruments, to consider local to global arrangements in managing vegetation fires with both ecological and human needs in mind.

The Pyeongchang Declaration produced by the Conference acknowledges a handful of contemporary challenges. It cites strong concerns over the contribution of vegetation fire emissions to climate change, the application of fire in land-use change, accumulating effects of global change on fire regimes, and increasing impacts of fire on society, notably on human health and security. Several additional concerns that were explicitly recognized included the role of vegetation fires on

- Positive feedback loops and disturbances in the global system
- Ecologically sensitive and carbon-rich environments like tropical rainforests, peatlands, and arctic tundra
- Agricultural systems and beyond (trans-boundary impact of agricultural fires such as long-range transport and deposits on of black carbon on the Arctic ice)
- Environment and humans, stemming from collateral damages of armed conflicts
- Contaminated terrain including industrial, unexploded ordnance and radioactivity
- Fire-induced immediate threats to human health and pre-mature mortality through fire-smoke pollution

Clearly, the above concerns cannot be considered in a local-only context; fire and smoke cross borders and create regional or global challenges. The conference participants, citing the collective interest, therefore recommend a two-tier response for addressing local to global fire management challenges. Summarized from the Conference Declaration these are:

- **International politics:** Collective international action is needed to address impacts of vegetation fires that are of trans-boundary nature. Applying principles of Integrated Fire Management (IFM), based on the wealth of traditional expertise and advanced fire science, contributes to sustainable land management, ecosystem stability and productivity, maintenance and increase of terrestrial carbon stocks, while reducing unnecessary emissions and pollutants that affect human health and contribute to climate change.

- **To capacitate nations in addressing fire management challenges:** To implement IFM, capacity building, investments and outreach work is needed globally. As traditional and advanced knowledge of IFM principles is available for all vegetation types, the systematic application of IFM, notably community-led fire management approaches, should be promoted by exchange of expertise between countries. Countries and international organizations should support these objectives by establishing regional training programmes and resource centres. Bilateral agreements and multilateral voluntary exchange instruments should also be supported.

To engage leaders to act on these recommendations, the Conference Statement (annex to the Declaration) elaborated a three-level approach and recommended nations support the following goals:

Goal 1. To help those most vulnerable, to address fundamental threats posed by fires on human health and security; to lend financial, technical, or operational support; and to offer expertise, basic training, strengthen local education efforts, support capacity building and community-led initiatives.

Goal 2. In "transitioning" fire management settings where basic needs are met or institutional capacity are established,

Regional fire management field training for Mongolia and Central Asia: Fireline construction in preparation for a prescribed burn. Photo: RCAFMRC

the fire management community is encouraged to continue supporting efforts under Goal 1; establish regional programs and resource centers where needed; advance technical efforts such as fire detection, early warning and monitoring; enhance cross-border cooperation; promote practical measures like standard operating procedures and the Incident Command System (ICS); and to strengthen participatory fire management approaches (community-led, volunteer).

Goal 3. In "advanced" fire management settings, Goals 1 and 2 shall be continually evaluated and improved as appropriate; nations shall further develop legal frameworks where desired; enhance bi- and multi-lateral mechanisms for fire management expertise and resource sharing; share and advance science and technology.

A clear outcome of the Conference was emphasis on expanding international cooperation and response mechanisms, and exchanges of information and technical and scientific expertise. A key recommendation to facilitate this process was to make better use of existing institutions and to create new ones where needed. In particular, establishing more training programs and national and regional resource centers are a top priority.

The Global Fire Monitoring Center (GFMC) has played the lead role in facilitating cross-border cooperation and exchanges, and serves as coordinating secretariat of the UNISDR Global Wildland Fire Network. For instance, the Central Asia Regional Network has undertaken initiatives and activities, like an agreement on transboundary fire cooperation between Mongolia and Russia, regional fire management conferences, consultations and trainings in different countries of the region.

Oyunsanaa Byambasuren, Director of the newly established Regional Central Asia Fire Management Resource Center in Ulaanbaatar, Mongolia, further explains the function of his Center:

> *Like other Centers, we are playing a critical role to make the Network activities more efficient. It is addressing increasing demand for collection and distribution of data and information relevant to fire management among local stakeholders and regional neighborhoods, facilitation in capacity building at regional level, and the exchange of human and technical resources. To enhance capacity and participation in fire management of civil society, notably local rural communities, the Center is also conducting fire management training at local community level.*

Two sister centers, which were established in 2010 in Skopje, Former Yugoslav Republic of Macedonia, and in 2012 in Kiev, Ukraine, are coordinating the activities of the Southeast Europe/Caucasus and the Eurasia Wildland Fire Networks. As of 2015, Brazil intends to support the establishment of another resource center for coordinating the Regional South America Wildland Fire Management Network activities.

An outcome of the Conference was vibrant commitment by the Republic of Korea to establish themselves as a major player in the region by consolidating four current regions into a Pan-Asia Network to better facilitate cross-border cooperation and training exchanges (see previous Wildfire issue). The country's intention, supported by the Korea Forest Service, is to greatly expand the ASEAN-ROK Forest Cooperation (AFoCo) training program, establish a Regional Resource Center and to invest in areas such as knowledge transfer and community-led fire management. Similarly, the GFMC has urged the International Tropical Timber Organization (ITTO) to consider supporting the establishment of such centers of excellence in South America, Southeast Asia and West Africa.

In total, endorsed by the United Nations International Strategy for Disaster Reduction (UNISDR), the GFMC assists in coordinating international cooperation between 14 Regional Networks with varying levels of activity. At the Conference, there was a strong showing of representatives from these networks, who reported on the accomplishments, challenges, and intended future activities of their regions. Both the Conference Declaration and the more extensive Conference Statement are based on the Regional Network reports.

4. Fire, Climate Change, and International Politics

As adept as our scientific and applied fire expertise has become, we remain amateurs in our understanding of the aggregate effects of fire on humans and the earth's system. Our knowledge hinges largely on our very recent and still limited ability to monitor global fire activity from space, calculate fire's share in emissions, or model the smoke impacts on premature mortality rates. We lack accurate and comprehensive data for today and we have limited historical data for these issues, making it difficult to grasp the complete context of our current fire situation.

Such uncertainties often beget political inaction. Managing the fire challenge is analogous to action (and inaction) on climate change. To face the magnitude of challenges posed by fires, it is imperative that the global community initiate action, despite lingering uncertainties. Oddly, fire has been largely excluded from climate change discussions – if only mentioned as a symptom of deforestation. This is changing, as fire is being increasingly understood as both a consequence of and a driver for climate change.

During the United Nations Framework Convention on Climate Change (UNFCCC) 20th Conference of the Parties (COP 20), in 2014, the world's political community was warned by the world's scientific and professional fire management community. A statement issued by the GFMC underscored the need to address global vegetation fires in the context of climate change, largely referring to a 400-page White Paper commissioned by the United Nations International Strategy for Disaster Reduction (UNISDR) to evaluate the global state of vegetation fires and global change between 1993 and 2013. The White Paper was a comprehensive effort by 58 lead scientists and experts in fire science, ecology, atmospheric chemistry, climate change modeling, and remote sensing (11). Some of those authors for many years belonged to the Team of Specialists on Forest Fire that was tasked by the United Nations Economic Commission for Europe (UNECE) to:

> *… Provide a critical link in communication and cooperation between fire scientists, managers and policy makers. … organize seminars; and promote of synergistic collaboration between governments, non-government institutions, and individuals, with emphasis on science and technology transfer, and support in developing fire management policies. (12).*

Convincing upper-level policy makers to legitimize global vegetation fire may be logical, but is certainly a challenging step. Fortunately, the organizational skeleton of a globally concerted fire management strategy is already present, but needs to be stitched together into a more comprehensive program. Identifying actors who are already rigorously engaged, and providing the appropriate support, would be a relatively low investment. According to one of these actors—Goldammer—he emphasizes an additional need for shared principles:

> *It is necessary that humans—policy makers—develop consent on how to deal with fire in a changing global environment. We have altered our landscapes to such an extent that no longer is anything really 'natural' anymore. With our many [human] influences, nature does not just function separately from humans. In reality, we are talking about nothing short of planetary management.*

Now, for the first time in the history of the conference series, climate change has been given priority recognition. In fact, the Conference Declaration is explicitly directed at the UNFCCC COP 21 climate treaty negotiations. It reads:

> "The COP 21 is encouraged to acknowledge the role and endorse the support of Integrated Fire Management as an accountable contribution to reduce greenhouse gas emissions, maintain or increase terrestrial carbon pools in all vegetation types and ensure ecosystem functioning."

Compared to 2014, when the GFMC—an NGO—delivered a message, now in 2015 a nation state—the Republic of Korea, as host nation of the IWFC—issued an unprecedented Ministerial Decree to the COP as a vehicle for delivering the Conference Statement. Also at the climate summit, Indonesia's Presidential Address recognized its fire problems and reinforced concerns on the issue. Singapore explicitly focused on fire-induced ecosystem

Brazilian and international specialists work together on a fire management field campaign in the State of Tocantins, Brazil. Photo: GFMC.

degradation and emissions contributions, while Malaysia re-emphasized mitigating these impacts through restoration and reforestation projects.

Indeed, the Paris Agreement of December 12th 2015, in Item 55, recognizes this request and in Article 5 encourages the [signatory] parties to pursue "…policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks…"

The next IWFC host, Brazil, seemingly has a grasp on the interconnectedness of climate-change, forest degradation and destruction, and fire use. These important political moves are a critical step in legitimizing an internationally shared understanding of fire management imperatives.

Considering how intricately fire is integrated into various aspects of culture and peoples livelihoods, and how important a tool it is for communities globally, a political approach to fire management must ultimately be integrated, and community driven. Pyne's fundamental understanding of "local fire" may turn out to be the best point of reference we can follow, even while addressing fire at a global scale. When asked about actions local fire management officials should take in light of contemporary challenges, Stuart Ellis, CEO of the Australasian Fire and Emergency Service Authorities Council (AFAC), responded with:

> *[It is important] to ensure our [local] efforts in fire management align and can be measured with the (UNISDR) Sendai Outcomes for Disaster Reduction. [We] must take a global view and be aware of initiatives and activities outside of Australia, in order to better manage fire inside Australia. You can always learn from others.*

A humble yet stalwart supporter of cross-border cooperation in fire management is Tom Harbour, the outgoing U.S. Forest Service Fire and Aviation Director. As much as anyone, his keynote in Korea summarized the issues we face. In digested form, his key points frame our fire future as one that demands a global strategy and a shared set of fire values:

A cohesive strategy will honor the past, but focus us into the future. While our systems have been developed to cope with what we have experienced, we must be challenged to better prepare for what WILL come. International exchange is crucial in developing a new doctrine—and symbiotic mutualism must be at the base of a new cohesive strategy; holistic and unified is the future trajectory of fire management. To continue in concert with one another, we must have agreed-upon values. We must work between the servant and master [of fire] roles.

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A California native, **Lindon Pronto** earned bachelor degrees in Environmental Analysis and German Studies from the Claremont Colleges. He spent seven fire seasons as a wildland firefighter with the U.S. Forest Service, working on crews, engines, and helicopters across eight states. He's presently completing a M.Sc. degree in Environmental Governance from the University of Freiburg Germany, and working as an Officer of the Global Fire Monitoring Center, which supported his work (along with the Korean government) in preparing for and supporting the 6th IWFC. He thanks all who contributed to this article -- In particular, Johann G. Goldammer for being a walking library and memory for international fire management affairs, and Tom Harbour for his life-long service to the firefighting and international fire management community