HazNet

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FIRE

CONTENTS

CHRNet

Editor's Note 4
Welcome from the Executive Director 6
President's Note 7

INTERVIEW

Todd Kuiack, Emergency Management Director - Indigenous Services Canada
by Lilia Yumagulova 8

Dr. Ryan Akers: Youth Preparedness Initiative MyPI
by Lilia Yumagulova 14

INSPIRE

Female firefighters

Stephanie Whitney 22
Alice Cullingford 23
Michelle Vandevord 24

IN DEPTH

Fire Management in Canada
by Paul Kovacs, Alice Cullingford, Mike Flannigan 26

RESEARCH

A Visual Essay to Aid Emergency Responders and ESS Workers in Understanding Victims' Perspectives on the Meaning of Home
by Mary Ann Murphy, Fern Helfand, Penny Cash, David Scott 34

Advice for emergency managers from the First Nations Wildfire Evacuation Partnership
by Tara K. McGee, Amy Christianson, Kyla Mottershead, & Henok Asfaw 40

A study calls for firefighter wellness monitoring to address cancer and other risks
By Len Garis 44

LESSONS LEARNED

From Ember to Inferno
by Shaun Koopman 46

BC Wildfires 2017: Lessons Learnable
by Cheryl Rogers 50

The Grenfell Tower fire and its impact
by Joana Duque McFadden 52

Editor's Note

Back in 2002, as part of my engineering degree, I interned at the Regional Fire Department for the Russian Republic of Bashkortostan. As part of my duties, I organized years of statistics in dusty archives. When I compiled them in a simple excel graph, I was startled: the number of fires and the number of casualties increased several fold between 1991 and 1992, with elderly hit the hardest. Something extremely significant had happened, something that fundamentally altered fire dynamics in the republic.

That something was the collapse of the Soviet Union. Government plays a critical role in regulating and investing in public safety. Seeing the huge spike in the data was a watershed moment for me in my engineering-track career; it showed me for the first time the importance of social and governance dynamics in understanding the root causes of disaster risk. Like many other risks, fire risk is always affected by the structures and people who manage our essential services.

We see this in Canada as well. As an immigrant to this country and as a disaster risk reduction professional, I cannot help but ask why, according to the 2007 Canada Mortgage Housing Corporation report, First Nations people are 10 times more likely to die in a house fire. Most of the victims are young children.

This special issue on fire is a call for action. In this issue, you will find a critical examination of the successes and failures in addressing fire risk and the root causes that contribute to fires. You will find exceptional content for connecting knowledge to action, exploring innovative examples from research and practice of fire and emergency management.

In our Interview section, as part of our Indigenous disaster risk reduction leaders series, you will learn how Todd Kuiack's team at Indigenous Services Canada is supporting community resilience through a comprehensive approach to emergency management, education, infrastructure and economic development. You will also find out about an inspiring example of a US-based youth training program called "MyPI," or My Preparedness Initiative.

In our Research section, you will read about a call for a "firefighting wellness strategy" to address the disproportionately high risks of cancer and other illnesses and injuries faced by the firefighters. This section also contains advice for emergency managers regarding evacuations in First Nations communities.

You will find a special visual essay exploring the valuable lessons learned during the 2003 Okanagan Mountain Park wildfire that can be used by first responders and emergency social services workers. It's been 15 years since the fire, one of the most devastating in British Columbia's history, destroyed 238 homes and forced the evacuation of more than 33,000 people. In Fern Helfand's words, University of British Columbia photography professor, "The wind swept away the smoke, providing a mesmerizing, surreal and panoramic view of an entire hillside ablaze, anxiously witnessed by residents and evacuees." One of these images was selected for our cover.

In our In-Depth feature, you will find a collaborative article that brought together some of the leading experts from the insurance industry, academia and practice to reflect on the progress made and the challenges remaining for fire management in Canada. The article is also a call for action.

In our Lessons Learned section, you will read about the 2017 BC wildfire season from the perspective of the emergency social services directors for 100 Mile House and about the lessons that can be understood from the Canadian Disaster Animal Response Team. You will also learn how the 2017 Grenfell Tower fire in London, UK, prompted many fire departments around the world to re-examine the ways in which they deal with fires in tall buildings. In our Inspire section, we highlight the exceptional careers of three firefighters.

It takes a small village to put an issue together. On behalf of the HazNet team, I would like to thank all of our authors, contributors and peer reviewers. Our internal HazNet team has grown and changed. Carime Quezada takes over from Marina Sheelina as our design and layout lead. We thank Marina for her beautiful vision and dedication to producing the stunning issues of HazNet since 2015. Nicole Spence and Suzy Waldman take over from Sarah Kamal as copy editors. We thank Sarah for her exceptional service over the past three years. To learn more about the HazNet team visit http://haznet.ca/about-haznet/.

In our society and within our field of practice, we have achieved significant progress reducing fire risk through regulatory, construction and behavioural changes. However, fire risk has changed as well due to land-use and resource-use patterns, climate change and other environmental shifts. It is this dynamic interplay of risk reduction and risk creation that keeps emergency management professionals awake at night. The work of trying to understand this seesaw between risk and resilience is what keeps our primarily volunteer HazNet team going, creating informative and timely content for our readers and all Canadians.

Join us in shaping Canada's resilience story.

Lily Yumagulova,
Editor, HazNet
www.haznet.ca

Executive Director's Message

Springtime is upon us once again, which also means a new issue of HazNet, the magazine of the Canadian Risk and Hazards Network. HazNet is produced in the spring and fall of each year and has become a valuable resource for all working in emergency management and disaster risk reduction. Thank you to our editor Lily Yumagulova and her editorial team for another excellent edition. My first interactions with Lily were as a contributor to an earlier edition of HazNet, and her eye for detail and commitment to a quality production are second to none.

As the seasons change, so too is CRHNet changing and growing. The Symposium last fall saw an expansion to the Board of Directors, the election of new faces around the table, and Michel C. Doré, a co-founder of CRHNet, stepping into the role of President. Last fall also saw the retirement of Marion Boon from the Executive Director position. Her experience in the emergency management and disaster risk reduction field was extensive, and she left very big shoes to fill. As your new Executive Director, I bring experience in municipal governance and resiliency planning to this opportunity to serve.

This is an exciting time for CRHNet, as the Board has made recent decisions to shake things up. They are creating more opportunities for all portions of the disaster risk reduction community to connect and share through actions such as changing the timing of the annual Symposium and forming new partnerships for collaborative conferences. I'm looking forward to supporting the Board's national leadership and movement in these endeavours.

CRHNet's commitment to the publication of HazNet remains strong. It is a vehicle to share your experiences, observations, and research, and is an integral part of CRHNet's efforts to build stronger partnerships among academics, practitioners, NGOs and others in the emergency management community. Read it, learn from it, share it, and don't be shy to contribute to future editions.

Enjoy this Spring 2018 edition of HazNet.

Christy Arseneau

Executive Director, CRHNet

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The President´s Message

The Disaster Risk Reduction environment is moving at a faster pace than ever. With changes in technology, increasing knowledge, and larger impacts on society, we all must adapt. In this ever-changing environment, the Canadian Risk and Hazards Network (CRHNet) needs to seize the opportunity to leverage such a context. As such, CRHNet now co-chairs the Canadian Disaster Risk Reduction Platform. This recent appointment illustrates CRHNet's leadership position in the Canadian disaster management community.

CRHNet has grown from a small collection of individuals passionate about building bridges to the national Network of Networks we know today. Our role to connect the disparate parts of the DRR community - that is the practitioners, the academics, the researchers, the non-government organisations, and more - is more important than ever. It is for this reason that, building from over a decade of successes, CRHNet is focussed on the future.

During the 2017 Symposium in Halifax, CRHNet opened a discussion on the future direction of the organisation. This discussion reinvigorated actions to build linkages amongst the DRR community. The Board of Directors has begun supporting diversified activities with the aim of better informing decisions based on science. A prime example is that CRHNet is working to hold a special conference in Vancouver from October 29 to November 1, 2018. This combined conference promises many opportunities for exchange amongst the emergency management and disaster risk reduction communities.

The discussion in Halifax also led to other changes. The Board recognised that the status quo of the symposium was not creating the desired level of intersection amongst all parts of the DRR community. By comparing the timing of recurring local and regional events with a DRR focus with the academic calendar, it was decided to move the annual symposium to the spring, at a time that minimises conflicts with the academic calendar and other long-standing sessions amongst the practitioner community.

This combination of moving a well established symposium to a different season, and the collaboration with other organisations to provide combined conferences, are two bold steps in a direction that I believe will serve the disaster risk reduction community well. We look forward to welcoming you to Vancouver at the end of October 2018, and Winnipeg in late May 2019.

Michel C. Doré Ph.D., CEM, CGU.

President, CRHNet

Community resilience: connecting emergency management, education, infrastructure and economic development

Todd Kuiack

Emergency Management Director

Indigenous Services Canada

By Lilia Yumagulova

As part of HazNet's Indigenous disaster risk reduction leaders series, we interviewed Todd Kuiack about his team´s work at Indigenous Services Canada in supporting community resilience in First Nation communities. Mr. Kuiack brings years of foreign service experience to his current position.

LY: Could you please tell us about your background (your home community, your educational and professional paths) that brought you to your current position?

TK: I am from a small town of about 200 people called Madawaska which is in Ontario, near Algonquin Park. I'm the youngest of eight children in a family that has an Aboriginal mother. She's Algonquin. We're members of the Golden Lake First Nation or the Pikwàkanagàn First Nation, a reserve close by. My father is from Wilno, Ontario. He's Polish. Don't ask me how they met - it's a long story!

At the time, I was the only one from Madawaska to go to university; I know there have been others since. I wanted to go to university to study Environmental Science and Physical Geography so I enrolled in a science program at York University with help from my First Nation. I'm very grateful for the funding that they were able to provide through their educational program – it helped me continue my studies into my Masters.

When I was doing my Masters in Science, I ended up writing the Foreign Service exam. I passed the exam, went through an interview and ended up being offered a position with Foreign Affairs. They trained me in French for a year, then they sent me on core courses on how to become a diplomat working overseas, followed by some Spanish training and voila, I spent eight years in Costa Rica, Mexico, Chile, Cuba. Then after seven years coming back to Ottawa for two children, I went to the Dominican Republic as ambassador on my last posting. Through all of those positions overseas, I was always involved with emergency management from the point of view of on-the-ground preparedness. As I went on in my career, I would work with the local government in disaster risk reduction. This allowed me to see the connectivity between governance and infrastructure, education, economic development and emergency management, so it provided a very good holistic view on how to reduce the risk around these types of catastrophes.

LY: Could you take us back to that day when you had to execute an evacuation?

TK: I was in the Dominican Republic as the ambassador when the large earthquake hit next door in Haiti. We felt it in the capital Santo Domingo. Getting the reports that an earthquake hit very close to the capital city of Port-au-Prince put us all into action. We knew that we were OK and confirmed with all of our folks that there was no tsunami warning. But trying to reach out and get our colleagues on the other side of the island, to make sure that they were OK… I remember that night very well. It was very late by the time we got through by satellite phone to our ambassador in Haiti. We had been working with Haiti on many initiatives, including reforestation of the river basin that they share with the Dominican Republic. It hit me that there were obviously some huge issues around emergency management and the link to poverty and vulnerable communities. So when we had the earthquake that devastated and killed 200,000 people and left over one million homeless, that put a lot of pressure on the Dominican Republic and it also showed the best of the country's nature by sending in aid right away. Despite some tense times throughout the history of the two countries, they certainly did help one another. We evacuated 101 Canadians that first night when the Hercules airplane came in from the CAF and arranged for medical assistance, food and shelter, etc. It was one of those times that you realize these types of disasters can happen at a moment´s notice and it can change people's lives forever.

LY: What are some of the lessons that you've learned from this disaster diplomacy?

TK: Two to three days after the event in Haiti we had a large-scale conference hosted by the Dominican Republic. We flew President Preval across the border in a UN helicopter to bring him to this conference. He was still wearing the same shirt that he had on when the earthquake hit. The same suit. He hadn't slept. He was obviously exhausted. I arranged for Preval to speak with our Prime Minister at the time to reassure him that Canada would stand with the country and provide assistance. The coordination of all the countries working together, including some as far away as Australia (a country that is not in the same hemisphere and has no natural economic or cultural relations with Haiti), that were providing millions of dollars of assistance through country-to-country donations really underlined how these types of disasters bring the global community together.

LY: What impact can Canadians make for disaster resilience abroad?

TK: One example is an organization that started off with a Canadian tourist that was living in the Dominican Republic. He walked up to me at a reception (he wasn't invited to the reception) and introduced himself. He had a crazy idea of getting fire trucks into the Dominican Republic. While the Dominican Republic is much better off compared to Haiti, it is by no means a rich country. It has the wonderful resorts that we are all familiar with as Canadians, but there is long-standing poverty. Some communities are missing the very basics of infrastructure and facilities like fire trucks. His dream in the aftermath of the earthquake was to put a fire truck on one of the incoming Hercules while we were still sending many, many containers of goods and troops to

assist overall on the Haitian side. So he used his contacts to do this; the Hercules landed and got fuel in the Dominican Republic, flew the short trip over to Haiti, and helped with the evacuation of Canadians. The fire truck came off that Hercules airplane with a Canadian flag on it. The people of the Dominican Republic were able to use the truck wherever they wished to send it. Since that time, I know that many donations have been received, not just in the Dominican Republic, but in other countries in the area. But it was this one Canadian, who led a small group of Canadians to band together, that took gently-used fire equipment to countries and communities that otherwise would not have any.

I believe each person has a role to play to help others and become involved. They do what they can and use the talents that they have to increase resiliency in their communities. Now, having a fire truck is just one step, of course; training on how to use equipment that goes with the fire truck takes a little bit of a budget to maintain that fire truck, etc. This is where I feel larger communities can play a role. Certainly, as the Canadian ambassador, I was able to talk with other companies, tourist companies, and hotels that were interested to use fire trucks to keep their communities safe.

LY: Given your Foreign Service experience, what are some of the key lessons that you bring to your work on Indigenous disaster resilience in Canada?

TK: My overseas experience is really an advantage. We have many First Nations that wish to build up their resiliency to ensure their communities are safe. This is no different than all of the communities that we work with overseas. I think the uniqueness lies is in the many Indigenous communities in Canada that are trying to use Traditional Knowledge to ensure their communities are safe. For example, in Saskatchewan, a FireSmart program works closely with the Indigenous communities on the ground to ensure that their communities are safe by reduction of fuel. I think buy-in from the local communities is essential for these types of programs to take hold. First Nations communities know the lay of the land, the history of the area, and most are in tune with the local environment. This is something we've learned overseas: you can't just parachute an idea into a community and hope that it takes hold; you have to let the idea unfold in an organic way by working hand-in-hand with your partners and your stakeholders.

LY:

In a context of acute daily pressures, when there are very basic needs that aren't met, emergency management can be seen as a bit of a luxury. Are there any other parallels with Indigenous communities in Canada and communities that you worked with overseas in regard to the overall state of emergency management regimes?

TK: Certainly our leaders and the leaders of overseas Indigenous communities are continuously trying to balance a budget with all sorts of conflicting priorities. I've been very lucky to go into First Nations communities and speak with people on the ground. I've also spoken with Tribal Councils and larger national Indigenous organizations. They all say the same thing: you cannot separate economic development, infrastructure and education from emergency management. Each one is essential when you're trying to support a resilient community.

On my wall I have a diagram of supporting community resilience to enhance Indigenous emergency management. At the heart of this diagram is community resilience, which is surrounded by four quadrants of emergency management, economic development, education and infrastructure.

> **"Similarly, you can have the best thought-out emergency management plan, but if you have economic challenges or if the infrastructure is really not sufficient to withstand a good rainstorm much less flooding, then we're going to have issues around emergency management."**

You have to make sure that when we are building back that we're building back better. We're following the Sendai Framework, which Canada has signed on to, so that when a community is affected we work with them in order to avoid a repeat of this disaster.

LY: **In your opinion, what are some of the key challenges and opportunities for Indigenous disaster resilience in Canada?**

TK: We're really excited about the research that we've been doing. We shared this research at the CRHNet Symposium and at the National Platform for Disaster Risk Reduction. We spoke about two aspects of evacuees: evacuations in Canada and First Nations evacuations in Canada. The major finding is that First Nations evacuations on-reserve tend to happen at a much higher rate.

> **"Our data shows that over the last 30 years there is a 33 times greater chance of being evacuated due to wildfires if you're living on a First Nations reserve as opposed to off-reserve.**

I'm very proud of my team; they track this data very closely. They know the communities that are affected. We aggregate the data so that we're compliant in terms of privacy, but when we look at the aggregate numbers there is an 18 times greater chance of being evacuated from a reserve due to any type of disaster, be it flooding, wildfire, or a tornado, than off-reserve. And even when we start to eliminate larger cities and start comparing oranges to oranges—looking at smaller communities—the numbers are still much higher.

There is a large standard deviation, however: one year, in 2015, residents had a 500 times greater chance of being evacuated compared to 2016. With the Fort McMurray wildfire, it was a six times greater chance. Based on the data available for 2017, it was the second-worst year in terms of on-reserve evacuations, since we started to collect these numbers over 10 years ago. The worst was in 2011 with the floods in Manitoba where we had 20,000 people evacuated. For 2017, we had 15,000 evacuated from a large diversity of emergencies (floods in the spring, fire in the summer); but people tend to forget those floods because we had such a large and long forest fire season that affected BC in unprecedented numbers.

We also saw over 7,000 people evacuated in Manitoba this year due to floods and wildfires. Our big priority was to get people back home as quickly as possible. We're very proud to say that despite over 15,000 people being evacuated that 99.7% of them have returned home. At the time of this interview, less than 100 people were yet to return home due to the forest fire and flood evacuations this year. We believe this is because of the policies that we've been changing internally to make it easier for people to understand the process to follow to get assessed and start to rebuild their homes - and to build back better.

LY: **We hear anecdotally from First Nations across the country that a very well-intentioned evacuation process can trigger residential school trauma, as soon as people see cots, etc. Is Indigenous Services Canada doing any work on culturally sensitive practices for evacuation and other disaster risk reduction activities?**

TK: I've been going to Parliament these last few weeks as part of a Parliamentary Committee on the wildfires of last summer. I've been listening to different First Nations speak and yes, this is something that one of an MP in BC noted. Many Indigenous evacuees went to the powwow grounds, a culturally appropriate space for Indigenous people as well as a safe space. When I was on the ground in Kamloops during the evacuation, I spoke with the local representative from the Native Women's Association of Canada. She showed me how they had safe spaces specifically for women; single mothers, elders, and youth are disproportionately affected - no different than vulnerable communities worldwide. We would be remiss not to take steps to ensure that these communities during a disaster are properly treated and protected. So I was very happy to see that.

Still, there are steps we have to take in other parts of our country, as noted this summer in Manitoba. The issue, as you pointed out, of PTSD from residential school trauma, and the related generational trauma is something that has come up in different provinces at different times and it is triggered in certain situations. I'm very proud to have worked with people like Dr. Brenda

“I think that it is really important that we understand this: no one wants to be evacuated; Indigenous people do not want to be evacuated from their homes, and they want to get back home and get back to a normal life as quickly as possible.

Murphy and Dr. Laurie Pearce on sponsoring their program on interviewing evacuees. First person accounts are recorded on video and are posted on our website.

We hear in their own words their emotions and perspectives throughout being evacuated. What comes out through their stories is extra stress.

We see this with the floods here in Gatineau with Canadians who don’t live on reserve. After six months, they still haven’t returned home and they say “you know, living in a hotel is just so stressful.” That stress for Indigenous people on-reserve is also very real. We take that into account every day: we are not working just for the Canadian government; we are also working on behalf of all the First Nations and especially the ones that are out of their homes wishing to get back home as quickly as possible after an evacuation.

For me, it’s so important that we mitigate these disasters to make sure they don’t have to evacuate. The example that I used at the conference was the approximately $5 million that was spread out among 23 First Nations communities, who identified the work needed to mitigate floods in southern Manitoba. The work was then carried out by First Nations people on-reserve to move stones, break up ice, clean out culverts, put out sandbags, put up Tiger Dams, and hold training sessions so they’re aware of what to do during a flood.

This was all done ahead of the flood season so that when the waters did rise, when the snow did melt, that very few people were affected by flooding. And that saved not just money, but lives affected; these 23 communities had 32,000 people living there approximately. Imagine the cost if each one of these people had to be evacuated due to flooding and their homes had to be repaired. The average per evacuee per flood event is $34,000 according to our internal data. With 32,000 people potentially affected, that’s a great deal of money potentially directed towards response and recovery. By mitigating,

we not only saved resources, we helped prevent the social and psychological costs of evacuation.

This is why our job is to ensure that we’re taking into consideration each and every person and to really recognize all of these evacuees and all the people that are living on First Nations reserves do not want to be evacuated.

LY: **What could the Sendai Framework for Disaster Risk Reduction mean at the community level in Canada?**

TK: I believe that the Sendai Framework will allow different levels of government and communities to agree on a shared vision of what a resilient community could look like. It will give a more holistic perspective on how to improve disaster risk reduction. Building back better is just one aspect of this framework, but I can see how important it is for us to adapt to the changing environment to be better prepared. An example specific to flooding is an 18-inch culvert should be replaced if it is not large enough to withstand more frequent flooding. Bringing academics, politicians, and local Indigenous knowledge together to mitigate disasters is very powerful.

LY: **What role can Canada play in this field internationally (reflection on the meetings in Cancun)?**

TK: I sat on a working session for the Cultural Heritage and Indigenous Knowledge for Building Resilience in Cancun. It was chaired by the Deputy Permanent Representative of the Federated States of Micronesia to the United Nations as well as community leaders from Garifuna, Honduras. The chair was an Indigenous woman from Honduras who brought an important Indigenous knowledge perspective: it is the whole aspect of preserving cultural heritage, which includes Indigenous knowledge, as key to disaster risk reduction in the sense that this contributes to a body of knowledge.

The example that I used in my speech was how the remains of the Franklin expedition in northern Canada was found in a bay that literally translates from Inuit to “the bay where the ship went down.” So if they would have just searched there, to begin with, I think they would have found it a lot earlier. Madeline Redford, the mayor of Iqaluit and an Inuit herself, really liked that example as a way of showing that there’s a lot of obvious Indigenous knowledge and local knowledge that should be taken into account.

LY: **What advice do you have for Indigenous youth?**

TK: Obviously I’m biased towards education. For me, being able to travel the world and to see other societies and other cultures has really made me appreciate my own culture. There is a great connection between listening to your Elders and hearing their stories with a lot of knowledge and wisdom that can bestow upon you when you are travelling. Really, it’s just the toughest question because I don’t want to come off as preachy or anything like that, but when it comes to Indigenous youth, I never thought that I would end up as ambassador to the Dominican Republic. I really did not see that in the cards. But if you’re open to experiences and you keep following your dreams and your passions and then find out what you’re good at, the world will recognize you and you’ll end up doing some interesting work – and in my case very important work that affects a lot of people.

This interview was produced as part of HazNet’s Indigenous leaders in disaster risk reduction series. To read more interviews, visit:

http://haznet.ca/section-interviews/

Watch a Joint Statement on behalf of Indigenous Peoples at the Global Platform for Disaster Risk Reduction 2017

Todd Kuiack is currently serving as the Director of Emergency Management for Indigenous Services Canada (ISC). Prior to joining ISC, Todd held a number of positions in the Department of Foreign Affairs and Trade Development including as the Director of Management Services in the Office of Protocol; Director of the Area Management Office for the Asia Pacific Branch; Director of the Visits and Operations Division in the Bilateral Relations Branch; Senior Advisor to the Assistant Deputy Minister of Human Resources, with responsibility for communications and addressing the issues of spousal employment and teleworking ; as well as Director of Cabinet and Parliamentary Affairs. His postings overseas include Mexico, Chile, Cuba, and most recently as the Ambassador to the Dominican Republic from 2009 to 2012. While in the Dominican Republic, the Earthquake in Haiti next door saw him lead the evacuation of over 100 Canadians, as well as work with local authorities on emergency management issues following the Earthquake. Todd has been recognized by the Aboriginal Professional Association of Canada in their circle of excellence. He has been an active member of the Indigenous Resiliency Working Group and has led many workshops and round tables on Increasing Resiliency in Indigenous Communities at the Canadian National Platform for Disaster Risk Reduction. He was chosen to make the declaration at the UNISDR global platform for Disaster Risk Reduction in Cancun on behalf of the Indigenous working group after taking part in the panel for Cultural Heritage and Indigenous Knowledge for building Resiliency in 2017. Todd holds a Bachelor of Science (Hons.) in Physical Geography from York University and is married with two children.

Preparing youth for emergencies and disasters: My Preparedness Initiative

By Lilia Yumagulova

My Preparedness Initiative (MyPI) is an award-winning youth preparedness and educational outreach program for American teens ages 13-19. Through hands-on training and classroom instruction, youth learn about their roles in disaster preparedness and response, use emergency response equipment, and explore emergency management careers.

The program has its origins in Mississippi. In 2014, the Mississippi Youth Preparedness Initiative won FEMA's national award for Outstanding Achievement in Youth Preparedness. The National initiative, known as MyPI National, replicates the model created and delivered in Mississippi. Both programs are recognized as affirmers of the U.S. National Strategy for Youth Preparedness Education.

We interviewed Dr. Ryan Akers, MyPI National Project Director, about program development from its origins in the State of Mississippi to the award-winning national program. To learn more about MyPI National visit: http://mypinational.extension.msstate.edu

Dr. Akers is an Associate Extension Professor of Community Preparedness and Disaster Management at Mississippi State University. Dr. Akers coordinates the Mississippi Youth Preparedness Initiative (the forerunner of MyPI National), MyPI National (a national youth preparedness/youth leadership hybrid program), and the Mississippi State University Community Emergency Response Team (MSU CERT), among other programs. In 2014, MyPI was awarded FEMA's Outstanding Achievement in Youth Preparedness award and also received an Honorable Mention designation from FEMA for "Preparing the Whole Community". Dr. Akers was named a "Champion of Change" by the White House and spoke on MyPI and youth preparedness at the White House and FEMA headquarters. In 2017, MyPI received another national award when MyPI National received FEMA's Outstanding Achievement in Youth Preparedness award and another Honorable Mention designation for "Preparing the Whole Community".

Photo taken by program photographers in September, 2014. Akers is 4th from left.

LY: Can we go back to the very origins? How did this program come about?

RA: We take youth preparedness in Mississippi very seriously, understanding the critical role youth can play in preparedness and resilience. In 2013, I was serving on the Mississippi Citizen Corps Advisory Council. Citizen Corps is a grassroots, volunteer-led movement that is usually attached to either a State Emergency Management Agency or a State Homeland Security Department. In Mississippi, Citizen Corps is housed in the Mississippi Office of Homeland Security. Based on my research background and my practical background, I had the opportunity to serve on that board and create a unique partnership, not only with Citizen Corps, but also with Dave Nichols, its Program Manager. Dave and I have a lot of shared interests, paramount among which is the protection and safety of our communities in Mississippi. At the same time, Dave and I both have a rich background in mentoring and working with youth. This model developed because of our two shared passions and our desire to blend them.

LY: What are the core elements of the program?

RA: MyPI is a youth preparedness/youth leadership hybrid model with three main components.

Component A consists of activities based on the United States DHS/FEMA-certified CERT module-driven curriculum, which focuses on Disaster Preparedness, Fire Safety and Utility Control, Disaster Medical Operations, Light Search and Rescue, CERT Organization, Disaster Psychology, Terrorism and CERT, as well as corresponding specific Hazard Annexes.

At the very heart of everything we do is training our teens through the recognized CERT curriculum. However, we recognized that there are some gaps within the CERT curriculum particularly when working with today's teenagers, and we wanted out program to be unique. In that respect, we wanted to be more robust than just a CERT program. Dave and I felt that we could come up with a model that addressed the learning styles of today's teens while capturing their attention and energy, and so we did that through the remaining program components.

Component B, the Add-On Catalog features certification options in CPR and AED, along with a technology track comprised of awareness programs focusing on HAM Radio, NOAA Weather Radio, Smoke Alarm Maintenance, and Smart Phone App and Social Media in Emergency Preparedness. The Add-On Catalog also includes a severe weather add-on component, a disaster simulation, and a career track focusing on public safety, fire service, and emergency management careers.

Dave Nichols (left) and Ryan Akers (right) at the Mississippi Partners in Preparedness annual conference in 2015.

We have a technology track because we know teens today love technology. Or even if they don't love it, they certainly operate a variety of technology that our older generations never had growing up. So we created a technology track that addresses four different areas of technology:

1) Amateur radio. A lot of teens today don't know much about Ham Radio. We are bridging that gap by educating them about its benefits and explaining how to be licensed in its use;

2) NOAA weather radio. We created a partnership with the National Weather Service in Mississippi to add a focus on severe weather, and we discuss how NOAA weather radios can contribute to that focus;

3) Smoke alarms. We have a smoke alarm maintenance and education program that our local fire safety educators lead;

4) Smartphones and Social Media in Emergency Preparedness. This is a very popular component of the MyPI program.

Once teens are wrapping up their MyPI experience, they also get to participate in a disaster simulation. Whether they participate in a full-scale exercise, a functional exercise, or a tabletop exercise, they are able to see all of these principles they learned in CERT come together and how they work.

Disaster simulation and triage instructions. MyPI Virginia. Photo supplied by Ryan Akers.

The other component of our Add-On Catalog is a career track component. I don't know how it was for you when you were growing up, but I can tell you how it was for me: I was basically told by family members that I was either going to be a doctor or a lawyer. Most people know something about the academic tracks students must forge to enter those fields.

To enter first responder fields, the academic path is more ambiguous. Youth don't know where to apply or what to focus on to get into public safety, law enforcement, and the fire service. Especially Little is known and communicated about emergency management, which is a rapidly growing field. There is a perception you either need a law enforcement background or a military background to go into emergency management, because that is what people see in those positions—but that's just not the case.

Component B, the Add-On Catalog features certification options in CPR and AED, along with a technology track comprised of awareness programs focusing on HAM Radio, NOAA Weather Radio, Smoke Alarm Maintenance, and Smart Phone App and Social Media in Emergency Preparedness. The Add-On Catalog also includes a severe weather add-on component, a disaster simulation, and a career track focusing on public safety, fire service, and emergency management careers.

So in our career track, we bring in representatives from local law enforcement, local fire service, and local emergency management to talk about how they became educated in their fields, a day in the life of their jobs – even what they don't like about their jobs. Another great thing about the career track is it also creates an informal network. If a teenager in a county in Mississippi or another partnering state or territory wants to ask additional questions once their MyPI experience is over, they have now a face and a name they can contact. That adds a lot of value.

The third component is where we get to see an exponential impact of the teens' work. On the first day of class, students are given the suggested guidelines for what goes in an emergency supply kit and a family communication plan. They are directed to either develop these from scratch or enhance already existing ones with their household and also with six additional households.

Imagine the local impact of that engagement, as well as the impact across the nation of the work completed by these teens. Every one of our teens that graduates from our program ends up working with seven families. When we deliver MyPI in Mississippi, we attempt to cap our classes at 24 teenagers per county. If all 24 complete the program, that's 168 families per county directly impacted by the work these teenagers. If we offer the program twice in one calendar year, that is over 300 households per county that have been directly impacted.

Mississippi is a largely rural state, and there are areas where we teach that may not have 300 households. When we offer this program in that a rural area we're looking at a 100% impact by delivering this program. And that impact is driven by the students, who get to experience everything that goes with it: increased self-esteem, a feeling of civic duty, and pride.

That is the 3-component model we developed in Mississippi in 2013. It won the FEMA's ICPD National award for Outstanding Achievement in Youth Preparedness in 2014 after 11 months of full-scale delivery. We continued delivering MyPI across Mississippi and expanding our footprint to try to reach all 82 counties as well as the Choctaw Indian Reservation. We wanted to blanket the entire state.

After the award, we had a certain level of newfound clout and viability, that in addition to some established relationships, created a boon in terms of success for our program. Because of a partnership that Dave and Mississippi Citizen Corps had secured with many high schools, we now had school doors opening across the state for us to deliver our programs to teens inside the school setting. We capitalized on that momentum and began to partner with these schools and their teachers. Now, MyPI Mississippi is being taught in formal school settings through Allied Health Science classes, Law and Public Safety classes, and as part of Vo-Tech programs. It's also being taught outside of school settings through organized youth programs and community agencies.

Now we're not fighting to try to get in front of students—schools are helping us do that. We're not competing with extracurricular activities after school anymore, as schools are letting us accomplish our goals in their classrooms. That's been fantastic. As we develop partnerships with other states in MyPI National, we're trying to get in those classrooms as well.

We've also become an Affirmer for the National Strategy for Youth Preparedness Education. The goal of this Strategy is to create a nation of prepared youth. This branding helps us continue to grow our program in Mississippi and throughout the nation. A particular point of pride I have in the MyPI program, as it relates to the National Strategy for Youth Preparedness Education, is our program incorporates all 9 strategy points or priority steps that the US Department of Education, FEMA and the Red Cross outlined in the National Strategy. Not very many programs are able to say that.

LY: How did you scale up to go national?

RA: First, we continued to expand our county footprint in Mississippi and to see great results. We thought: "We are on to something here in Mississippi with our program, so why should it be contained within our borders?" Then we got out in front and said "Who better to replicate this program and oversee that replication than the people that created it?" So we created an umbrella entity known as MyPI National complete with a team of subject matter experts that would replicate the MyPI model in seven additional pilot states.

In Phase 1, we took the MyPI model to Nebraska, Hawaii, Washington, Tennessee, Illinois, Virginia, New Jersey, and included Mississippi. In March 2017, Nebraska hosted the first 'Train the Trainer' program we offered. All of our Phase 1 partners have until July 15, 2018 to graduate a minimum of 125 teens who enhance preparedness efforts for 875 households. While that is a small amount, we can capitalize on that impact.

One of our overarching project goals is to reboot emergency preparedness for youth among all of our partners. And we are doing that in an organized and consistent manner that has a complete evaluation system providing data and impact. So for Phase 1, once our partners have each graduated 125 teens, we'll be able to see the community impact they have had on 875 households across each partnered state or territory.

We are collecting and compiling that data for our partners and providing the data and impact statements they need to help them network with other agencies and private corporations to get money to sustain their programs over the long haul. We didn't go to Washington to train instructors to see MyPI Washington fall by the wayside after two years. We want to make sure that their program is still viable and running when we go back to Washington in 10 years. So we've laid a foundation to make that happen.

Based on the results and momentum so far from Phase 1, we've also decided to expand MyPI National's umbrella. A lot of states and agencies were contacting us saying "How can we get involved in this movement?" and we were getting a lot of interest from other potential partners that wanted to be involved. So we were fortunate enough to be able to create Phase 2 Expansion for MyPI National and incorporated Georgia, North Carolina, Arkansas, South Dakota, Nevada, Montana, Arizona, Colorado, Alabama, Oregon, and Guam, our first US territory. We are actually in the process of a Phase 3 expansion at the moment, so I hope to able to bring good news to other partners across the US and its territories in the very near future.

We've held preliminary talks with other countries about the model as well. Who knows, but we may see a MyPI International partner in the future. With our proximity to Canada, we've even considered what a MyPI Canada might look like. We're very ambitious with this program, with big plans as well as the resources and motivation to follow up on it.

LY: How was the curriculum developed for this program?

RA: The foundation—Component A—is based on the CERT curriculum developed and certified by the US Department of Homeland Security and FEMA. As they make changes and revisions to that curriculum, we do the same, adjusting as needed for the teens context. Then we added our Components B and C to address some gaps as well as the learning styles of today's teens.

LY: Are there any context-specific tools that have been developed, or are they primarily national tools?

RA: They are national tools, but they offer a very engaging approach to delivering the material that is completely customized for teenagers. Our program is very different than having teenagers in the classroom learn the CERT curriculum and then leave. We honestly feel like we're setting the new standard for preparing youth for emergencies in this country. That's what MyPI aims for, and the data that we're seeing from the program is suggesting that as a possibility. We're really proud of what our evaluation measures are showing us with regards to both youth preparedness and youth leadership.

As we start seeing similar results through MyPI National, we're going to get a little more vocal in terms of the message we deliver to the agencies. We're hoping in a few more years to be able to go to our friends at FEMA and other relevant agencies and say "Here are the results we've compiled on how we have prepared our youth in MyPI, and we are doing it through a program that has been recognized twice as a national award winner for engaging teenagers in preparedness. We see this a model that we'd hope to see adopted nationally to train teens today moving forward. That's an ambitious goal, but one that our team strives for in our efforts. No one rises to low expectations, so that's what we are working towards.

Jaenahleyn Kanaha, MyPI Hawai'i participates in First Aid training

LY: Thinking back to your early graduates back in 2013, have you kept in touch with any of them. What kind of careers have they gone on to? Did the career track make a difference?

RA: That's a great question. I'll be blunt: I wish we'd had the foresight to start a longitudinal study when we began MyPI. We've considered conducting longitudinal studies across our programs, but unfortunately, we don't yet have data sets to talk about the career decision impact.

What we do have is causative data we collect from our instructors who keep us updated in what their students go on to do after MyPI. For example, we recently had a student who is a MyPI graduate go on to win the championship at an International HOSA (Health Occupational Students of America) competition.

Furthermore, these days, when I watch the severe weather events we are seeing in the state of Mississippi—which are now year-round and growing in number and destructive impact—one of the questions that always comes to mind for me is "Was that a MyPI trained community? Did the teens in that community have the opportunity to prepare their households and enhance community preparedness overall? And when I see a community that has been hit, but has had a MyPI cohort, I feel a bit more confidence in that community.

We also have an evaluation system that measures our participants' retention of knowledge gained from the CERT curriculum. We've also adopted another evaluation procedure based on 4-H common measures, which assesses program impact on communication enhancement, self-esteem, empowerment, engagement, civic responsibility, family cohesion, family decision making, among other items. We're seeing enhancement across the board in all of these areas, so we know our program is making a significant impact in people.

LY: What is your graduation rate?

RA: We don't turn anyone away from our program, but we don't graduate everyone—as things come up. However, being in the school system has dramatically helped graduation rates. When we look at the number of emergency supply kits and family communication plans being developed, that's a good indicator of the work that we are continuing to achieve. My quick estimation is we are graduating around 85-90% of our students, but numbers are still coming in from other MyPI National partners.

LY: My next question is around 'Train the Trainer'. Who are the instructors?

RA: Our initial point of contact thus far is with the land-grant institution in each state/territory and their respective Extension Service which serves as an umbrella agency that incorporates youth serving programs, like 4-H. The Extension Services have achieved time-honored respect for their work across the states, and also have a pre-existing network and access to youth. Once we've identified some Extension personnel—ideally who also have emergency preparedness responsibilities and/or access to youth—we also reach out to state and local emergency management, first responders, CERT programs, and high school teachers to seek volunteers to teach in the program as well. That gives us a nice community of professionals working in emergency management, emergency preparedness and youth outreach. We like to create these partnerships with a broad array of passionate instructors. If the land-grant institutions decline to participate—which is rare—then I go straight to state and local emergency management and begin developing the program through those channels.

In Illinois, where I am conducting this interview, I am also overseeing our Train the Trainer. There are 16 individuals across the hallway currently being trained as MyPI Illinois instructors. Fifteen of them are from the University of Illinois Extension, and one is a local emergency manager who is being trained to help these Extension agents deliver their program.

In Mississippi, we have public health officials that teach MyPI; we have retired individuals that teach MyPI. If our MyPI Instructors also have a background in emergency response and emergency preparedness, that's fantastic and even better for their students and for us. If not, we get them to where they need to be. The one thing they do need is motivation for working with teens. If they don't have that passion, this is not the program for them.

LY: What is the role of the MY PI national coordination team throughout the lifecycle of the program?

RA: I have direct oversight of MyPI National. However, I also have a fantastic group of subject matter

experts that makeup the National Coordination Team here at Mississippi State University. These individuals have highly specific roles and responsibilities related to the success of all state and territory-level MyPIs. There is also a Program Coordinator in each state/territory. I consider them to be a part of the MyPI National team.

So while MyPI national coordination starts with us at the top, it trickles down to state points of contact who are partnered with state emergency managers or local emergency management, and then down to local instruction teams. Drilling down even further, the local instruction teams have a lead instructor and supporting instructors as well as guest speakers.

LY: I can see how that structure builds resilience and relationships across sectors and across communities. My next question is around tailoring curriculum to meet specific community needs. If we take Mississippi as an example, how do you address rural vs. urban vs. reservations, with their very different requirements and levels of resilience?

RA: From the perspective of our model and the curriculum that we teach, there are varying threats that have been focused on in our delivery, but so far the curriculum itself has stayed the same. However, while we do have a very applicable program that's making significant impact, it is educational in nature and that goes both ways. We have a massive outreach campaign across the country, and we've been learning things ourselves along the way, which we take and apply in relevant areas.

I should point out that we do not have a 100% footprint in the state of Mississippi right now. We have been delivering MyPI in Mississippi for 6 years, we've tried to make a gradual movement across the state. We haven't reached the Choctaw Indian Reservation, though we do have subject matter experts involved and networks across Mississippi that are in tune with the specific needs of a tribal nation. However, as we grow the program into South Dakota, Nebraska, Arizona and Nevada, we'll be dealing with larger tribal populations in those areas.

One issue that could arise is in relation to our service projects. MyPI does not assume financial responsibility for developing an emergency supply kit—that falls on the household or the community. We provide our students with the education and the knowhow, as well as an emergency backpack that has some supplies in it, but the remainder of the financial responsibility to graduate from MyPI actually falls on individual households. We're generally not asking households to go out and spend $200 to build emergency supply kit, as most of these households already have most of these items—we're just getting them to add what they need and pull what they have together into one location.

LY: My next question is around long-term sustainability. As you mentioned you provide some support to each stage in terms of finding funding, long term funding to make sure this lasts. Can you please tell us what are some of the key lessons learned?

RA: In terms of long term sustainability, what we've learned is that each of our partners is unique. Washington is different than Mississippi, and Illinois is different from Washington. We could not come into Illinois assuming we knew exactly how it would operate. We knew the program we were delivering, and what we were going to build there, but the product is shaped by the personalities and the management styles of the partners we're working with.

As we continue to grow our program, showing and promoting our individual, family, and community-wide impacts is critical. We do this through social media campaigns, our partners' websites, and our MyPI National website. We make sure community and government officials know what the programs are and that our partner's Extension and emergency management administrations know about the fantastic work their instructors are doing.

We do this so we can pool our resources and expertise and help everyone involved. We want to band together to work on sustainability efforts. We can form networks that can reach out, whether for a Congressional request or a request to a private corporation or to a national or regional corporation that wants to put a bit of financial focus behind youth leadership and community preparedness. What I have found in my work is that unfortunately, it's not that difficult to found someone who is not attuned to emergency preparedness, particularly as it relates to youth. It's my job then to educate them. However, it's a bit more difficult to find someone not interested in youth development and youth leadership. Often times, we find that we have to shape our message around those terms and then drill down to youth engagement in youth preparedness.

This networking strategy has also been quite helpful for finding new advocates and instructors in the new states we're entering. We have non-profits coming on board to have a couple of instructors trained who are then going out and delivering the program. We're getting to these groups a lot earlier than we did in Mississippi. Now that we know who to contact, we're building relationships very quickly across the country, and we know they're going to be successful.

LY: How are you maintaining a communication network and sharing your success stories through social media and other channels?

RA: We get the word out a couple of different ways. The MyPI National Team develops and maintains excellent partner websites and social media accounts for all programs. If you are a partner in MyPI National, that's part of the package.

The national website provides a breakdown of the program, the subject matter expertise of the people involved with the project, an overview where we are with each individual MyPI partnered program, and contact information. The partner-level websites also provide this information. But behind their public face is a private face with an online resource library housing all the presentation materials needed by instructors. In the private version there is also a reporting system. After lead instructors deliver a class, they complete a template-based form that comes to me as the National Project Director—that way I can see what is going on across the country. There is also an online learning forum with a message board, so when our instructors have questions or comments about anything pertaining to MyPI, such as delivery, planning—anything at all—they can post a message, and state-level and national administration and all of the instructors get an email and can add what we can.

Zachary Schwentor with First aid kit. MyPI Hawai'i

When it comes to social media, every partner and national program has a Facebook and Twitter account. Typically, we use the medium to get preparedness information out to interested parties, whether concerning hurricanes, earthquakes, volcanoes, or even an eclipse. We put safety and preparedness information out there, and we ask that our instructors like and share our pages. People don't have to be involved in MyPI to benefit from the messages going out from our social media platforms because most of the message is general preparedness tips and suggestions that can benefit everyone.

LY: Ryan, thank you so much for sharing your work with us. It is truly inspiring; you are creating a community-based culture of resilience. For my final question, what is the long-term plan for the program?

RA: The goal we have within our program is long-term viability and sustainability with people knowing what our program is about for many years to come. We are always open to talking with people about our program, what it stands for, and possible expansion opportunities.

We are in this for the long haul, and we've tied ourselves intricately to entities like 4-H. Usually people recognize the 4-H logo when they see it. Our goal is that likewise, the logo we've created for MyPI National and for our MyPI partner-level programs will be recognized long after we are gone from this earth. We hope people will see it and think, "That's MyPI, the emergency preparedness program that helps me become a better leader and protect the safety of my family and my community, giving me a platform to make a difference in this world".

Stephanie Whitney, Fire Chief at Winlaw Fire Rescue, is the first female chief in the history of the Regional District of Central Kootenay, BC.

Photo credit: Tyler Harper, Nelson Star.

My name is Stephanie Whitney. I live in Appledale, which is about 8km north of Winlaw.

I loved firefighters as a child, but was not interested in it initially as a career. Then I received a pamphlet in my mailbox stating that our local department was short on recruits, so I decided to give it a try.

My first call was a fully engulfed trailer fire: I'd never seen a fire that big before. After we put it out I think we all went out to dinner because we were exhausted and starving.

Good communication is key for our profession, as is being calm in stressful situations. Physical fitness is also beneficial but we have all types of bodies on our department. There are many skills needed to become a firefighter, all of them can be taught.

I hope that the next generation of female firefighters will be confident in themselves. It is not a male profession any longer; some of the best members on our team are women.

Alice Cullingford - Acting Captain, Mississauga Fire and Emergency Services

I'm Alice Cullingford, Acting Captain with Mississauga Fire and Emergency Services, Doctoral Student in Business Administration, and mother of two young children. Needless to say my life can be extremely chaotic. Firefighting, in some strange way, has actually been a calming force because it pushes me to slow down and be in the moment during emergency situations.

I was never a child who grew up wishing to be a firefighter. My father was a research biologist and my mother was in sales and they were just happy I found something that I really wanted to do. There was no real epiphany. I just decided one day that I wanted to join the fire service and spent a year studying and training. I knew the physicality of the job and the camaraderie with the crews would suit my personality. I never realized that being female as well as being a firefighter was a big deal until people made it a big deal. To be frank, I feel uncomfortable when people differentiate me because of my gender in this profession. When I applied for this job, I applied to become a firefighter. Being female was, and still is, a moot point to me. I just wanted to work in emergency services and serve my community.

It has been interesting that after 17 years on the job I am still considered an anomaly... and I find this frustrating because I would like to think that I am known for my industry accomplishments as opposed to the sex I was born with. Many fire departments have diversity hiring practices but this can be problematic if the true meaning of diversity is not fully understood. Diversity is about diversity of thought and not delineated by the colour of one's skin or gender identity. Yes, fire departments need diversity but they need to be careful because in trying to attract a certain demographic, they may inadvertently polarize the workforce or devalue the very people they are trying to hire. It's actually about integration and moving away from the discourse of female firefighting and instead seeking ways to improve the industry of firefighting as a whole.

Michelle Vandevord is Manager, First Nation Emergency Management, Saskatchewan Emergency Protective Services.

My name is Michelle Vandevord, and I'm from Muskoday First Nation. The most important job I've ever had is being a Mother. I'm very fortunate to have been given three beautiful daughters, whom I love more than anything in the world. That is, until I had grandchildren…now there is love you can only appreciate once they touch your life!

I've enjoyed many different jobs on the reserve over the years, but none has been more important than my volunteer work. It's who I am, and it pushes me to be the best I can be. I do it to honor my Grandmother Delilah and Mother Lillian, whom I miss dearly. They instilled in me volunteerism and a love for my community at a very early age, and for that I will be forever grateful.

When I was asked to attend a Firefighter meeting at the Fire Hall, it was an easy decision. That was 18 years ago, and as I write this, I'm wondering—where did the time go? This summer will be my 19th year with the Muskoday Volunteer Fire Department. It's the most important job I've ever had with my community.

I joined Muskoday Volunteer Fire Department because at the time, there were no women on the force. I took it as a challenge to start something new, and also to be a role model for the young girls on the reserve—especially my own daughters.

It wasn't easy. I remember, at my first meeting, being singled out by the Fire Chief with remarks such as "Well, boys, now you'll have to shut the bathroom door!" I'm sure he'd seen other girls come and go. But it made me mad, and is one reason I stuck out my first year.

Today I thank him for that motivation, because after my first fire I was hooked. I became a part of a big family that I trust with my life and love very much.

The challenges and losses are huge in Volunteer Fire Fighting, as you are on call 24/7 with no pay, and in some cases no insurance. Resources are limited, and budgets depend on support from your Chief and Council.

Our department has been fortunate, but that is not the case for a lot of reserves. That is no fault of the Chiefs—I wouldn't want the responsibility of having to decide between clean water and fire equipment. These are choices that should never have to be made, but they do, all too often.

Our office is helping to change that, though. Last week,

our officers found, and delivered, a used Fire Truck to a community that didn't have one. On the delivery day, they started pumper-training firefighters. I can't begin to describe what that truck gives to the firefighters and the community. We're also helping First Nations draft MOUs and Service Agreements with surrounding rural municipalities to protect their communities.

My team has so much experience, knowledge, and dedication--without it, we wouldn't be where we are today. I'm proud of the work they accomplish every day, and I'd like to thank the families they leave behind to help others in Saskatchewan.

My advice for the next generation of girls who want to join a Fire Department is: Don't give up. Work hard and earn respect. Never be afraid of the challenges, because skills will come in time and with practice. Don't ever let anyone tell you that you can't do it, because you can. Be a role model on and off the job.

Most importantly, don't be scared to say when you are afraid to do something—but know your limits. It took me five years to climb a ladder and get on a roof, but eventually I did it. Be a hero in your own mind first, and then spread that spirit outward.

Currently, I work for First Nation Emergency Management, as Manager. My job is now my passion, as it allows me to help other First Nation communities in Saskatchewan with all aspects of Fire Service. How cool is that?

I love my job, and I take what I do very seriously, as peoples' lives depend on the services we provide. We have over a hundred years experience in our office, and we use it to mentor and support First Nation communities from all over Saskatchewan. Our goal is to build resilience, capacity, and sustainability in each community we serve.

My job before becoming a manager was Fire Prevention, and it continues to be a major aspect of my work. I visit First Nations schools to deliver a Fire Safety Program to all who want the program. That is what really saves lives in all our communities—being ready for a fire before it happens. Fire Prevention is not a week we honor once a year. It's something that needs to be done regularly and with passion. I encourage all teachers to check out NFPA.org and teach the Learn not to Burn Program regularly throughout the year. That program was made for teachers and has pre-made lesson plans. I guarantee kids will always remember the teacher who helped them make a home escape plan.

Finally, I'd like to thank a few people because without them I would not be where I am today. First, my family, because it was them I left behind whenever my radio went off. That was hard on my girls, so it makes me sad to think what I put them through as I rushed to help others. Without their support I couldn't have done this for as long as I have. Second, Uncle Ivan Bear, who accepted me as a member in our fire department: his leadership and love of the department will always be close to my heart. He's the reason our department is now what every First Nation's department should strive to reach. Third, Captain Randy Bair, who asked me to attend my first meeting: his mentorship and training has given me the skills I need to be successful and safe. I always be grateful for the day he passed me a fire hose.

Last but not least, I thank the Prince Albert Grand Council, who hired me to do the work I do today—Frank Bighead and Richard Kent especially have been mentoring me in my new role, and I've learned so much that some days I feel like I can change the world. They took a chance on a female firefighter, and now I work hard to prove to them they made the right decision. I love my job and I wouldn't change where I am in my life for anything!

Fire Management in Canada

By Paul Kovacs, Alice Cullingford, Mike Flannigan, and Lilia Yumagulova

Ashcroft, BC on July 14th, 2018 by Mike Flannigan

Canada's burning question

In this in-depth feature we brought together some of the leading experts from the insurance industry, academia, and practice to reflect on the progress made and the challenges remaining for fire management in Canada.

We have achieved significant progress reducing fire risk through regulatory, construction, and behavioural changes. However, fire risk has changed as well due to land-use and resource-use patterns, climate change and other environmental shifts. This dynamic process of fire risk reduction and fire risk creation offers rich opportunities for learning for addressing other risks.

A history of wildland fire management

By Paul Kovacs, Executive Director, Institute for Catastrophic Loss Reduction

For thousands of years, wildland fire has been present in North America. Many ecosystems depend on fire to bring renewal and regrowth, including prairie, savannah, and coniferous forests. Some plants and trees require fire to germinate and reproduce.

Fire is also a longstanding threat that can bring loss of life and destruction of property. The frequency and severity of fire has increased with more people living in the wildland-urban interface and active in the wildlands. Moreover, change in the climate is increasing the area burned by wildfire and the risk of loss.

Prior to European settlement

The wildlands in North America prior to European settlement were shaped by generations of natural and managed fire. In particular, fire management by Indigenous peoples transformed some forests into grasslands and savannah, and where forests remain, fire was used to increase the open space between trees and remove underbrush.

Indigenous groups across North America managed wildland fire risk for thousands of years. This included intentional, controlled burning of forests and grasslands. In moist climates, intentional fire was used in the spring to control new growth, while in dry regions it was more common to set fires in the fall. The cycle of burning would be suspended during periods of prolonged drought due to the increased risk of fires burning out of control.

Fire was also used during hunts to divert deer, elk and bison to specific locations, and to convert forest areas into grasslands that would support larger herds of grazing animals and in turn, increase the food available to support the community. Burning near settlements reduced the threat to lives and property by removing some of the fuel available if lightning should strike. Fire was also used to increase berry yields, reduce the cover that predators like wolves and bears may use to hide in, and ease movement through the wildlands.

Despite actions taken to manage the risk of wildfire, extended periods of drought could leave grasslands and forests vulnerable to catastrophic, uncontrolled fire. Fire could destroy property accumulated over a lifetime, ruin crops, and scare away prey. The risk of starvation and illness following the fire may have been the greatest threat.

Fire scarred trees on the lands of the Osoyoos Indian Band

European settlement

The risk of wildland fire in North America changed with European settlement. Settlers introduced the objective to suppress all fires. Moreover, settlers increased the frequency of ignitions in the wildland due campfires, sparks from a locomotive, and other sources.

In terms of loss of life, the largest fire losses ever experienced in North America took place following European settlement. Some large fires in Canada include the Miramichi Fire in 1825, the Saguenay Fire in 1870, Cochrane Fire in 1911, Matheson Fires in 1916, the Great Saskatchewan Fire in 1919, and the Haileybury Fire in 1922. Hundreds of people lost their lives and many villages were destroyed.

Following the Great Fire of 1910, the US Forest Service formally committed to a strategy of suppressing all forest and grass fires in the wildland. Governments across Canada soon adopted a suppression strategy for much of the country. A critical measure of success for firefighters focused on how soon a fire was identified and put out.

Overall, European settlement brought a focus on fire exclusion in the wildlands. For several decades, this resulted in a significant reduction of fatalities and property damage due to wildfire.

Toward a modern approach

Since the 1980s, the wildland fire loss events have grown in frequency and severity. Decades of fire exclusion increased the accumulation of shrubs, bushes and undergrowth. Moreover, there has been a remarkable increase in the number of people that pursue recreation activities in the wildland and live in the wildland-urban interface.

The Forest Service in the United States has withdrawn its commitment to suppress all fires in the wildland; nevertheless, firefighting efforts across North America continue to focus on the early identification and suppression of most fires in the wildland. The cost of fire exclusion has increased significantly, driven by the growing number of homes located in areas of risk and increased area burned.

In 2005, a joint federal, provincial, and territorial vision statement was released setting out a plan for managing fire risks through the Canadian Wildland Fire Strategy. This national vision seeks to establish a balance between actions to respond to wildfire, promote healthy forests, and build resilient communities. The vision statement was renewed in 2016, and enjoys strong support from a broad range of stakeholders, although most elements have not yet been funded.

Insurance and wildfire

By Paul Kovacs, Executive Director, Institute for Catastrophic Loss Reduction

Fire in the wildland occurs across the country. Management of wildfire risk is a national challenge led by the provincial and territorial governments, supported by the federal government. Since 1980, however, more than 95 percent wildland fire damage to insured property has taken place in Alberta and British Columbia. Insurance companies have focused much of their attention on Western Canada.

More than 95 percent of Canadian homeowners, and 99 percent of Canadian businesses purchase insurance protection for their property. All insurance policies cover the risk of loss and damage from fire, including wildfire. Modern insurance practices derive from the management of urban fire risk, and the industry has an active interest in the risk of wildland fire, the risk of loss, and risk management.

Since 1980, wildland fire has not been an issue considered by insurance companies in most years in most parts of the country. More than 90 percent of the wildland fire damage claims paid by Canadian insurance companies since 1980 were the result of fires in British Columbia in 2003 and 2017, and fires in Alberta in 2011 and 2016. In particular, most of the wildland fire damage claims paid were a result of the 2016 fire in Fort McMurray. The current interest of insurance companies in wildland fire is much greater than it was before these recent large loss events.

Some perils in a basic insurance policy coverage for homeowners include the risk of damage from fire, wind, hail, and lightning. Protection against loss from other perils may be added to insurance coverage, but are not part of the basic policy, like water damage from sewers backing up, earthquake, and overland flood. The risk of loss and damage from wildland fire is automatically included. Insurance coverage differs from company to company so it is important to check the details of a specific policy, but loss and damage from a wildland fire is typically included for a homeowner or business that has insurance.

Some property owners choose not to buy insurance. It is rare for homeowners and businesses to not purchase insurance, but many vacation properties and cabins in the forest are not covered by insurance. Insurance coverage is available and the cost is low, but some property owners choose not to purchase coverage. Many renters across Canada do not have insurance. The owner of the building may have coverage, but damage to the contents of an apartment are not included unless the renter purchases coverage. Moreover, insurance coverage is not always in place in First Nations communities, including many communities with a higher risk of wildland fire damage.

BCFS wildfire fighters.
Photo by John Chapman

If a home or building covered by insurance is destroyed the insurance company will provide the funds to rebuild the home, replace the damaged contents, and cover additional living expenses during the rebuild. There may be caps and limits in specific policies, but the general intention is to restore the property owner back to where they were before the fire. Insurance companies have decades of experience responding to urban fire losses. Recent urban-wildland interface events differ in that there have been many, even thousands, of buildings destroyed by a single event. The recovery takes longer with such large losses as it is more difficult to find building supplies and qualified workers.

In terms of the dollars of payment most of the damage claims that insurance companies have paid for recent wildfire events involve homes that are destroyed and will take time to rebuild. In terms of the number of property owners paid by insurance, more than 90 percent of the claims involve relative minor damage that can be resolved quickly. This may include living expenses when an evacuation is ordered, smoke damage, replacing siding melted by the fire, or replacing a refrigerator and spoiled food.

Insurance companies will, over time, introduce incentives for property owners and communities that work to reduce the risk of wildland fire damage, and/or additional charges for those that fail to do so. Insurance companies seek to align the risk of loss with the prices and coverage that they offer. In circumstances with an extensive history, like urban fire and vehicle collisions, key risk factors affect the price and terms of coverage. Those with low risk pay less, while those demonstrating high risk must pay more to secure insurance coverage.

Most wildland fire insurance damage claims have taken place since 2016, so insurance companies at this time do not have enough information about how to link pricing and coverage with available measures of risk. For example, insurance companies are facing new challenges and need to answer questions such as are homes with an untreated wood shake roof more vulnerable to the risk of fire so they should pay more for coverage? If so, how much more should they pay? Insurance companies determine the prices they charge based on the features of the individual building and of the community where the building is located. Communities can invest in fire breaks and fuel reduction programs to reduce the risk of fire damage, and the cost of insurance should fall for all building owners. With time and with more loss events insurance companies will better link pricing and risk of loss from wildland fire.

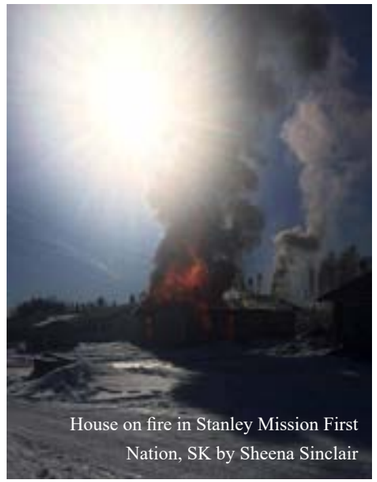
Several decades without large wildland fire loss events in Canada served to reduce the price of insurance for property owners in the urban-wildland interface to the extent that there was virtually no additional charge by insurance companies for wildfire risk. This has changed with the recent loss events in Alberta and British Columbia. It is unclear if wildfire risk is affecting the price of insurance elsewhere in Canada, but there is an expectation that the cost of insurance will likely increase for those located in the wildland or the interface in Alberta and British Columbia.

The insurance industry has invested in research to better understand the risk of fire in the wildland, the risk of damage to structures in the interface, and actions that can reduce the risk of loss. In Canada, much of this research has been provided by the Institute for Catastrophic Loss Reduction at Western University (ICLR). This includes workshops, publications, mapping, and field research. ICLR partnered with FireSmart and the NFPA to champion revisions to the building code to reduce the risk of fire damage for new homes. ICLR also partnered with FireSmart to provide outreach materials that insurers can use to promote risk reduction by existing homeowners and assess the risk of loss. ICLR also supported an examination of homes destroyed in Fort McMurray, and those rebuilt in Kelowna and Slave Lake to develop a 'build back better' program for insurance companies, and identify the characteristics of homes with low and high risk of burning.

The recent experience of large losses as a result of urban-wildland interface fires has resulted in increased insurance interest to understand the risk of loss and promote action to reduce the risk of damage.

First Nations Fire Protection

By Alice Cullingford–Acting Captain, Mississauga Fire and Emergency Services; Doctoral student Business Administration, William Howard Taft University



House on fire in Stanley Mission First Nation, SK by Sheena Sinclair

Similar to other Canadian municipalities, individual First Nations communities are responsible for their own fire protection. The department of Indian and Northern Affairs Canada (INAC), now known as Aboriginal Affairs and Northern Development Canada (AANDC), invests roughly $26 million a year (INAC, 2015) to help First Nations on-reserve communities achieve the same level of fire protection "comparable to other communities of similar size, location, and services" (AANDC, 2010, p. 3). However, it is unclear if truly representative comparisons are being made. AANDC follows formula-based funding that takes into account the surrounding environment, remoteness, number of people, and amount of buildings on reserve (INAC, 2015). Some remote reserves face infrastructure issues that limit their access to a water supply that is adequate for proper fire extinguishment, while other communities may have robust infrastructure and fully stocked fire stations but lack trained personnel to staff emergency vehicles.

Furthermore, since the abolishment of the First Nations Financial Transparency Act in December of 2015, First Nations defined under the Indian Act are no longer required to provide to their members "audited consolidated financial statements and a Schedule of Remuneration and Expenses of chief and council" AANDC, 2015, para. 3). However, even prior to the halt of this legislation, the exact amount of federal monies spent on emergency management on reserves is unknown because expenses were simply not tracked (Office of the Auditor General of Canada, 2013). The expenditures were instead nested within, or spread out among various ministries and programs depending on how the expense was categorized (Office of the Auditor General of Canada, 2013). Between 2009 and 2013, according to unaudited records, no less that $448 million was allocated to First Nations emergency management activities that included fire protection (Office of the Auditor General of Canada, 2013).

While funding is intended for fire protection services such as the building and maintenance of fire stations, fire emergency vehicles, equipment, and on-going training, band chiefs and councils ultimately decide how to manage and allocate these funds (INAC, 2015). Spending is discretionary. As such, monies can be moved away from fire protection to areas that are considered a greater priority. Additionally, approximately $200,000 annual funding is given by AANDC to the Aboriginal Firefighters Association of Canada for fire prevention, training, and awareness programs (INAC, 2015).

Even in the presence of funding and programs, fire protection services on reserve lack coordination (AANDC, 2010). Some First Nations have created their own fire departments (staffed mostly by volunteers) while others have opted to enter into formal fire protection agreements with nearby municipalities, and pay for these services out of their annual operating budget (INAC, 2015). If payment for fire protection is not rendered, there can be dire consequences: unpaid bills resulted in fire fatalities on the Makwa Sahgaiehcan First Nations reserve in Saskatchewan when the neighbouring municipal fire department did not respond to a house fire because of on-going billing disputes (Canadian Broadcasting Corporation [CBC], 2015).

To give an example of how the cost of fire services can impact a First Nations reserve– especially a smaller reserve with no stable economic base–it can cost (depending on the signed fire service agreement) $400 an hour per fire truck call-out, $300 an hour for a water tanker truck, $30 an hour for the attendance of a fire chief, and $25 an hour per firefighter (Do, 2015). Call-outs generally have a three-hour minimum service fee and reserves may be billed even if the calls are false alarms. One First Nations community in which house fires happened on a regular basis simply chose to let structures burn to the ground if it was "going to burn safely" (Stienwandt, 2014, as cited in Puxley, 2014, para. 11). While this may have been done to save on fire service payments, this choice of action (or lack of fire suppression action) indicates a larger socio-economic issue at hand. Moreover, because the majority of First Nations are governed under the Indian Act, most provincial and federal jurisdictions are limited in the provision of comprehensive legislation and regulatory practices surrounding fire protection (Aboriginal Firefighters Association of Canada [AFAC], 2017).

There are currently no requirements pertaining to fire inspection regimes or building codes that are enforceable for homes on reserve (AANDC, 2010; AFAC, 2017; CBC, 2015a). In contrast, in the realm of police work, a number of First Nations communities have tripartite agreements. For example, in Ontario, the Ontario Provincial Police [OPP], with funding from the federal government, is mandated by the Ontario First Nations Policing Program agreement to step in when adequate policing isn't provided in a community or reserve (Clairmont, 2006; OPP, 2014). However, there does not appear to be such agreements for minimum standards for fire protection between the various provinces and territories and First Nations. Mechanisms must be created to ensure that the government is accountable to First Nations as per signed agreements, and that band chiefs are accountable to their community members and the government from which they receive funds. It is of no use to be given funding if the capital is not used effectively, or if the community does not have the capacity to implement and place necessary programs into action.

The Aboriginal Firefighters Association of Canada is currently working to increase the coordination of fire and emergency services in Indigenous communities by implementing and Indigenous Federal Fire Marshal program; providing policy advice to Indigenous and Northern Affairs Canada (INAC) in the areas of fire and emergency services; liasing with the Association of First Nations and regional Indigenous political groups on the development of fire policy; collaborating with other national fire organizations; providing support to regional and community Emergency Management Organizations, and; providing support to enhance emergency medical services for Indigenous communities (AFAC, 2017).

There are many federal fire protection frameworks that are currently in place to help support the need for safety and inclusion. In addition, further answers can be found by looking at pre-existing data available from other federal and international organizations provided that the information is applicable in a First Nations and Canadian context. There are no easy remedies, but sustainable solutions can be achieved through collaboration, understanding, and finding proactive ways to move forward with the ultimate understanding that success requires buy-in and ownership. Calls to action addressing governments, institutions, and agencies can lead the way in creating fire protection mandates and mechanisms that will have far-reaching positive impact on all Canadians and First Nations communities.

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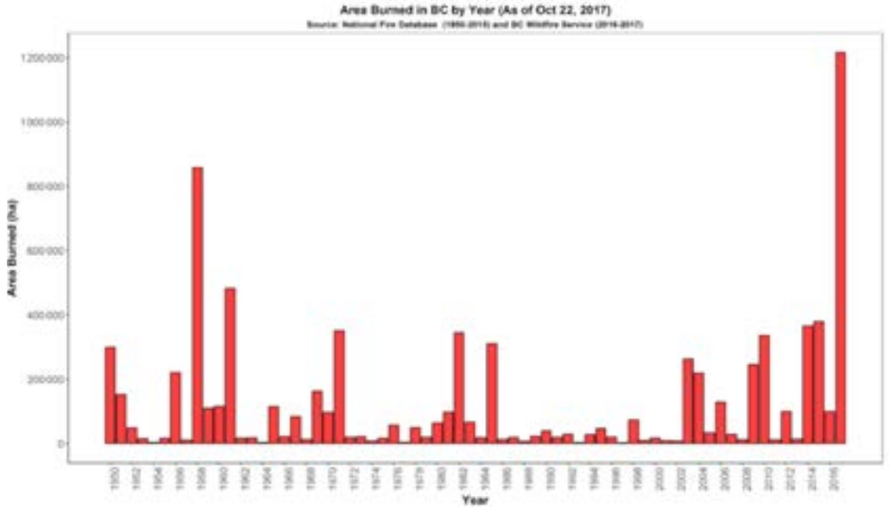
Climate and Wildland Fire

By Dr. Mike Flannigan, Professor, Department of Renewable Resources, University of Alberta

Fire activity is strongly influenced by four factors: fuels, climate–weather, ignition agents and people (Flannigan et al., 2005). Fuel amount, type, continuity, structure, and moisture content are critical elements for fire occurrence and spread. Although the amount of fuel, or fuel load, and fuel distribution (vertical and horizontal) influence fire activity, fuel moisture largely determines whether fuels can sustain ignition and spread (Wotton et al., 2010), and has been found to be an important factor in the amount of area burned. Wildland fires are mostly started by people or lightning. In Canada, about 60 percent of all fires are started by people but are responsible for only 20 percent of the area burned. However, many of these people-caused fires are responsible for significant impacts; for example, the 2011 Slave Lake and the 2016 Fort McMurray fires were people-caused. All people-caused fires are preventable.

Weather and climate, including temperature, precipitation, wind, and atmospheric moisture, are critical aspects of fire activity. Weather is one of the four factors influencing fire activity but it also influences two other factors, fuel and ignitions. Fuel moisture, which may be the most important aspect of fuel flammability, is a function of the weather, and weather and climate also in part determine the type and amount of vegetation (fuel) at any given location. Additionally, lightning is determined by the meteorological conditions. Weather arguably is the best predictor of regional fire activity for time periods of a month or longer. For example, Cary et al. (2006) found that weather and climate best explained modelled area burned estimated from landscape fire models compared with variation in terrain and fuel pattern. Although wind speed may be the primary meteorological factor affecting fire growth of an individual fire, numerous studies suggest that temperature is the most important variable affecting overall seasonal wildland fire activity, with warmer temperatures leading to increased fire activity (Gillett et al., 2004; Flannigan et al., 2005; Parisien et al., 2011). The reason for the positive relationship between temperature and regional wildland fire is three-fold. First, warmer temperatures may lead to a lengthening of the fire season with a longer snow-free period (Wotton & Flannigan, 1993; Westerling et al. 2006; Flannigan et al., 2013; Jolly et al., 2015). Second, warmer temperatures translate into more lightning activity that generally leads to increased ignitions (Price & Rind, 1994; Romps et al., 2014). Lastly, while all General Circulation Model (GCM) projections indicate considerable spatial and temporal variability in changes in summer-time rainfall amounts (both increases and decreases), it has been demonstrated that increased evapotranspiration from fuels on and in the forest floor will more than offset any potential increases in precipitation and lead to drier fuels (Flannigan et al., 2016). This is consistent with the testing of the sensitivity of landscape fire models to climate change and other factors, Cary et al. (2006) found that area burned increased with higher temperatures. This increase was present even when precipitation increased, although the increase in area burned was greatest for the warmer and drier scenario. The bottom line is that we expect more fire in a warmer world.



The global climate is warming and this may have a profound and immediate impact on wildland fire activity. Some suggest that wildland fire activity has already increased due to climate change. For example, Gillett et al. (2004) suggest that the increase in area burned in Canada over the past four decades is due to human-caused increases in temperatures.

Dennisonet al. (2014) found regional increases in area burned over the western US since 1984. These increases in area burned in Canada and western US were occurring despite stable or increasing fire suppression effectiveness (modern decision support systems, satellites etc.) and increased coverage by fire suppression resources. While the level of absolute change in fire activity may be uncertain, particularly since many studies do not consider the increase in lightning activity (Romps et al., 2014), overall it is clear that, barring very significant changes in forest composition, fire activity in Canadian forests will increase with climate change.

Conclusions

Now is the time to act on the increasing fire risk. Canadian fire management agencies are considered to be among the best in the world, but wildfire risk and associated impacts are increasing as the climate changes and as more development occurs in our forests and wild lands. The insurance companies have historically made progress in better understanding and pricing fire risk but new challenges are emerging.

As a country we need to invest in research, development and innovation. Other countries, such as the US, Australia, Sweden and Portugal, have responded to catastrophic wildfire seasons with dedicated or targeted funding programs for wildfire research, as the more we know about wildfire, the better prepared we can be for the next catastrophic fire season. Connecting this research to practice would also require investments and instituting a culture of continuous learning as part of risk management practice.

The equity gap in fire response, prevention and mitigation needs to be addressed.

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A Visual Essay to Aid Emergency Responders and ESS Workers in Understanding Victims' Perspectives on the Meaning of Home

By Mary Ann Murphy, Fern Helfand, Penny Cash, and David Scott

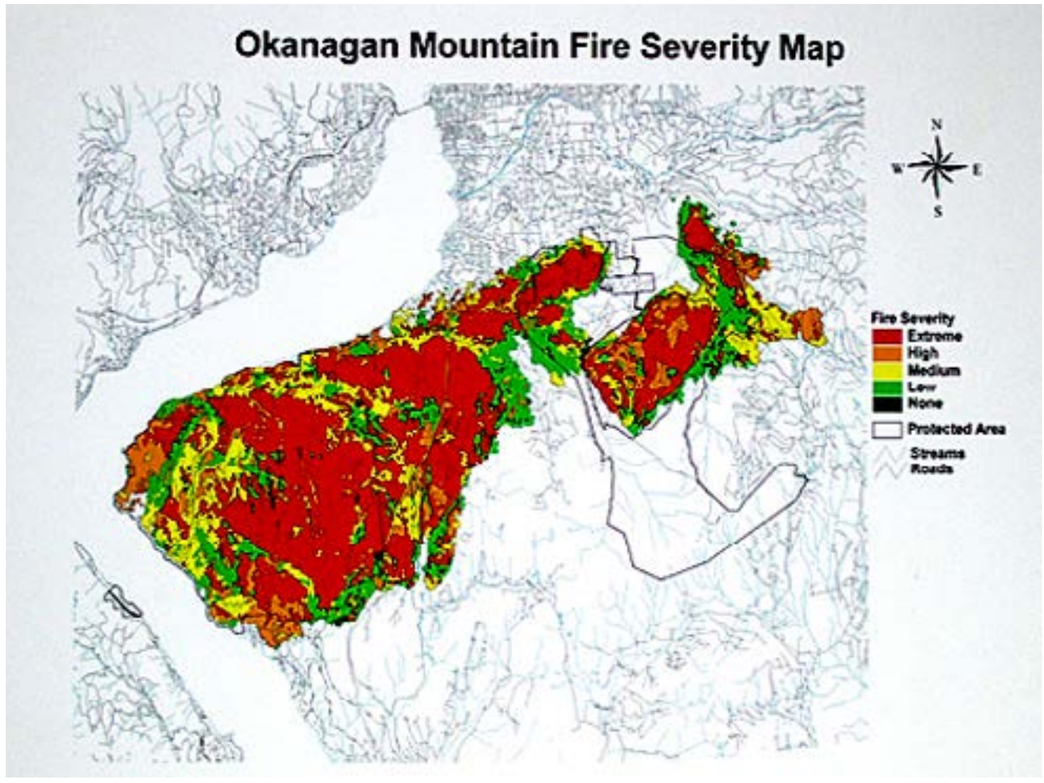
This mixed-media visual essay, based on the 2003 Okanagan wildfires, illustrates the depth and meaning of the loss of one's home and family possessions.

"Watching Homes Burn at 2am"

This work recounts the first-hand narratives of 25 Kelowna, BC families one year after losing their homes in the 2003 Okanagan Mountain Park Fire - one of the largest wildland-urban interface fires in Canadian history (Filmon, 2004, p.10).

Although started by a single lightning strike, the sight of an entire mountainside and homes ablaze mesmerized everyone.

This essay is a tribute to these families, and others like them, who typically react to the suddenness, speed, and intensity of a wildfire with surprise, shock, disbelief and acute stress. This disaster experience can culminate in hallmarks of grief and post-traumatic stress (Marshall et al., 2007, p. 512). Emergency responders and Emergency Social Services (ESS) workers should readily apply these families' timeless recollections to better understand and help victims of other disasters, particularly those affected by the increasing frequency and severity of fires (United Nations Framework Convention on Climate Change,1992; Wang et al., 2015). Three themes are identified from our research: 1) the meaning of home 2) other losses and 3) the significance of lost objects.



Earth and Environmental Scientist, Dr. David Scott (Research Chair in Watershed Management) describes the 2003 fire conditions

A. THE MEANING OF HOME

Man reacts to the visual impact of seeing his home destroyed. Photo credit: Donated by one of the family participants

"I say I lost my home (not my house) – a home that was really lived in and was happy and surrounded by antiques that were my grandmothers… the new place will be a house for a little while until some living is done in it, some memories happen …"

More than one mother described the homage of cleaning up the kitchen and leaving a light on when they closed the door on their home for the last time. Our ties to home - seen by these families in retrospect- may interact with elements of people, environment and time (Moore, 2003, p. 213).

The ties to home, and an emotional attachment to treasured and everyday objects - particularly the memories that they evoke- run deeply across generations of families. As one father said, "the culmination of your life is your home… a place of peace and healing." One woman described home as the place where you "gather without pretense and share a common history." Another woman movingly said that if she could stand in front of her old house, she would say "…[I'm] sorry-so long…it's been good to know you!"

We examined the real and significant meaning of home in the context of the monumental disruption of the families' lives. Home was described as a refuge, a sanctuary, a place to exercise daily rituals, a "reflection of your interior self," and a place where you generally prevail and "expend your most positive energy." In the words of these families, home represented the "most comfortable place," "a place of family celebration [and holidays]," a place to create and continue traditions," and, a welcoming and hospitable hub "for everyone to return to" as well as a "safe retreat from the problems of [city] life." One man summarized that "when you feel that everything you earned, the most private part of you has been taken away- it's really hard, you know?" "To not be able to go [back] at 5 o'clock … was devastating to me-what we have now is just a house." Another person said, "I would walk to the North Pole and back just to get my [old] house back, even though I know that this new [one] will be nicer!"

B. OTHER LOSSES

These victims lost more than a physical structure. Home was frequently described as being "a safe environment for raising a family, and a safe harbor to come home to every day." Many family members stated that they lost the comfort of home, with home being a "place not to worry." They pined over the loss of neighborhood attachment for their children and their friends, privacy, and both the "valuable time" they put into planning, building or maintaining their homes, and all the "lost time" later devoted to insurance claims.

The disruption of routine (Paveglio et al., 2015, p.7; Botey & Kulig, 2014) was well described by one father: "… especially with kids, it is the profound loss of a year of your life and the rhythms of where you were going, what you were planning to do, your family life- it is like a low grade, constant stress … like a light noise hum that never goes away." Another father stated "what we lost was a year of peace" and another said, "we lost the comfort of knowing our kids were always in the living room." Losses attributed to the fire appeared to only accentuate nostalgic feelings of place attachment (Lawrence& Anton,2014,p. 452). The term solastalgia refers to the loss of the comfort provided by a natural, intact landscape (Albrecht, 2006, p.34). One woman, in reference to this concept, stated: "I lost the place where I could take sustenance from the environment - it looked like Sarajevo here!" Some of the fire victims described how they nurtured back tiny surviving plants - unwilling to let them die.

The constancy of home

A woman reacts to the destruction of her familiar landscape

C. LOST AND MEMORIALIZED OBJECTS

What is the real meaning of the relationship between people and their interactions with everyday, taken for granted, things? Although clearly grateful to have survived, these families pined after a variety of valued and highly cherished – yet often inexpensive – objects. These objects included gifts received from grandparents, childhood toys, handmade presents, trophies and medals, books and collections (records, rare woods, family recipes, tools), photo albums, paintings, Christmas decorations forgotten during the summer season, and souvenirs of holidays and adventures. Some of these items were brought to Canada by immigrant families, and some represented a time in life when one sacrificed a great deal to acquire them. Other objects were tied to familiar and comforting rituals.

One mother desperately sifted through the rubble to locate the MOM coffee cup she ritually drank out of each day after work.

To her great joy, the broken treasure was recovered!

A variety of academic fields, such as social archeology, have recognized the 'subjective value' of these material things with their ascribed meanings influenced by our age, life stage, and experiences (Kleine & Baker, 2004, p. 2). These objects connect us to home, provide statements about our identities, represent shared events and are part of how we relate to the world. They help the past to survive (Pearce, 2004). Objects become imbued with meaning because for many of us they represent our social links and family histories. Objects are a form of self-expression. These objects are a touchstone for our memories and aspirations (Barnett et al., 2016, p. 2). For many, when these objects are destroyed, we think deeply about how we acquired, used, displayed, interacted with, shared, and miss them. Many of the couples we interviewed expressed a nagging guilt from overlooking or failing to preserve those items, such as baby books and hockey trophies, that represented family 'treasures' and their children's legacies. The acute evacuation stress they experienced had been framed as self-blame: "*...we were just so panicked and confused at the time... you know?"*

To conclude, these families also described some now well-documented gains they associated with the fire. These included clarifying their values, and appreciating the importance of their community, neighborhoods, and families. The wild poppies illustrate their hopes.

Super heating of the soil post-fire caused a rare rejuvenation and germination process

If you would like to hear more about this work, you can link to the online version to hear a description by Dr. Mary Ann Murphy, one of the researchers.

All photographs and animations unless otherwise credited, were created by Fern Helfand

A family memorialized the fire in their new rock wall

Advice for emergency managers from the First Nations Wildfire Evacuation Partnership

By Tara K. McGee, Amy Christianson, Kyla Mottershead, and Henok Asfaw

The First Nations Wildfire Evacuation Partnership brings together researchers at the University of Alberta and Canadian Forest Service; seven First Nations in Alberta (Dene Tha' First Nation and Whitefish Lake First Nation), Saskatchewan (Lac La Ronge Indian Band (Stanley Mission) and Onion Lake Cree Nation), and Ontario (Deer Lake First Nation, Sandy Lake First Nation, and Mishkeegogamang Ojibway Nation); and agencies that carry out or provide support during wildfire evacuations. The research team, together with research assistants, interviewed more than 200 residents to learn about First Nation peoples' wildfire evacuation experiences and identify ways to reduce negative impacts of evacuations.

Adaptive resilience

We found that all participating First Nations carried out their evacuations effectively in difficult circumstances. There are many examples of adaptive resilience, where decisions made during the evacuation helped to minimize negative impacts. For example, First Nations with road access organized transportation using school buses and provided evacuees with financial assistance to pay for gas. An evacuee from Mishkeegogamang Ojibway Nation shared the following about the benefit of having time to prepare to evacuate:

"Through the radio... people would call telling us what's going to happen. People actually stopped by the house too ... 'there'll be a bus here going around, gather all your stuff for at least a week,' they said. At least we had one day to prepare..."

Stanley Mission of Lac La Ronge Indian Band - Lynn Roberts

Innovative communication methods were used, including YouTube video updates by the Chief of Sandy Lake First Nation. Efforts were also made to keep families together. In Dene Tha' First Nation which was evacuated due to smoke, residents were allowed back to their community to check on their property and pick up supplies, as described by one evacuee:

"We came home one time 'cause we needed some clothes. They allowed us to come over... Like there was cops on the road. They said they give us just 45 minutes to get what we need. I didn't wanna buy more clothes."

Emergency Managers in First Nations

Although First Nations are responsible for preparing for and responding during an emergency, they often do not have the resources to employ an emergency manager full-time. In many of the First Nations in our partnership, the person responsible for emergency management was usually employed full-time in another position and carried out their emergency manager role in a voluntary part-time capacity. It is important that First Nations have a dedicated full-time emergency manager whose job focuses on prevention, mitigation, preparedness, response, and recovery from all hazards. This person would also be responsible for cost recovery following an evacuation.

Warning time

Our research results clearly show the importance of giving as much warning time as possible so that residents can prepare to evacuate. In Mishkeegogamang Ojibway Nation, the evacuation was carried out over three days, which helped residents prepare to leave and reduced distress. Preparation time also means that residents are less likely to leave behind important items such as medications. Providing advance warning also enabled residents outside their reserve to return and get organized before they need to evacuate.

Transportation

Transportation needs to be available in First Nations to ensure that residents can evacuate when required. Transportation should be arranged for large families, those who do not have access to a vehicle, and those in remote areas of the reserve. During their evacuation in 2014 and 2015, Stanley Mission (Lac La Ronge Indian Band) successfully organized bus transportation for a multi-stage evacuation to host communities as far south as Regina. As well, differences in vehicle registration and insurance requirements for reserves versus the province should be considered.

Culturally appropriate practices

Evacuating First Nation residents from reserves to a town or city, often a considerable distance away from home, added further stress on evacuees. When circumstances allow, emergency managers should consider having First Nations stay in their traditional territory or with nearby Indigenous communities that can provide culturally appropriate assistance and support. This would also reduce the racism that some evacuees experienced when they were hosted in towns. Having designated safe havens from wildfire smoke on reserves would help to reduce health impacts and may avoid evacuation in some situations. If evacuation to a town or city is necessary, efforts should be made to provide comfortable and culturally appropriate accommodation where large families can stay together, with private room options (hotel rooms, schools, offices, camps, etc.). A Deer Lake First Nation evacuee describes the importance of this:

Whitefish Lake First Nation 459 - Jimmy Grey

"With all the community members sharing under one roof, like you can't have rest. No rest at all. Because some of the community members, they don't sleep at night... So those people that have bad backs or health issues, I think they need more rest. I don't know, it just didn't work out for me, but I had to because I had no choice."

Culturally appropriate support including health services (mental and physical), translation to Indigenous languages, and traditional food and beverage services also need to be provided.

Keep families together

Our research findings clearly show the importance of keeping families together during wildfire evacuations. Separation of families occurred in most First Nations involved in our research. In Sandy Lake First Nation, residents were sent to 12 towns throughout Ontario and into Manitoba. This scattering of residents caused considerable distress for residents, detailed below by a Sandy Lake First Nation evacuee.

"I was so worried about my family; there was a time you don't know for days what's going on. There was no information, or how to find out, or where to call for your family, there was no way. And I don't think I heard from my family, once they left this community I didn't hear from them for maybe three, four days until I knew where they were. So that was worrisome."

First Nations are dependent on their extended family units for their well-being, so if families are separated because members are sent to different locations, this reduces support available to residents. It is also important to ensure that Elders are prioritized and supported during an evacuation.

Make information available

Information is vital during an evacuation. Residents need to know how to evacuate and where to go, and they need information about the status of the fire and the safety of their family members, home, and community. Chiefs and Councillors, community leaders staying with evacuees, and residents who stayed behind during the wildfires provided valuable information to evacuees.

Talk about recovery

Following an evacuation, it is important to bring community members together to discuss the evacuation as part of the recovery process. During our research, we discovered that some evacuees had not discussed their experiences with anyone before our interviews. Being able to talk about this traumatic experience is important for residents and community leaders involved in the evacuation process.

We sincerely thank the residents who spoke to us about their experiences. Thank you to the First Nations and agencies involved in the First Nations Wildfire Evacuation Partnership. This research was funded by the Social Science and Humanities Research Council (Partnership Development Grant), and the Alberta Centre for Child, Family and Community Research.

https://www.eas.ualberta.ca/awe/

Deputy Chief Robert Kakegamic (left), PhD student Henok Asfaw (middle), and Sandy Lake Councilor Fabian Crow (right).

Reduce costs to evacuees

Costs associated with the evacuation also affected evacuees and Bands. Many evacuees did not have extra money to pay upfront for expenses associated with the evacuation, including food and gas. There were differences in how funding was provided in Alberta, with Whitefish Lake First Nation evacuees receiving funding during the evacuation, and evacuees from Dene Tha' receiving a purchase order for a local grocery store at the end of the evacuation. In Saskatchewan, evacuees received food vouchers (ranging from $40 to $80) from the Red Cross during the immediate evacuation and before their return trip home. In Ontario, most evacuees did not receive financial compensation, which was an additional burden for residents during and after the evacuation. Some First Nations experienced significant delays in recovering the costs of their evacuation, and some were not reimbursed for the total costs.

"...When a disaster happens, keep everything together, because if you don't you're just gonna lose money, because that's what we did and we're still recovering. We still haven't finished recovering from 2011."

-Whitefish Lake First Nation administrator

Tara K. McGee is a professor in the Department of Earth and Atmospheric Sciences at the University of Alberta. Born and raised in Ontario, Tara's social science research on the human dimensions of wildfire spans 20 years and has included studies on wildfire prevention, mitigation, preparedness, response, and recovery. She is the academic lead for the First Nations Wildfire Evacuation Partnership. Tara completed the research with Mishkeegogamang Ojibway Nation, and assisted with the research with WhitefishLake First Nation (Atikameg 459).

Amy Christianson is Cree-Métis from Treaty 8 and is a Fire Social Scientist with the Canadian Forest Service, Natural Resources Canada. Amy's research focuses on Indigenous peoples and fire management. Amy led the research with Onion Lake First Nation and Lac La Ronge Indian Band, and assisted with data collection in Whitefish Lake First Nation (Atikameg 459).

Kyla Mottershead completed her MA research at the University of Alberta with Dene Tha' First Nation. She now works at Alberta Health Services.

Henok Asfaw completed his PhD research at the University of Alberta with Sandy Lake First Nation. He was also involved in the research with Deer Lake First Nation.

On-the-ground Perspective

As part of HazNet's soft peer review process, we asked a community member and a practitioner on the ground about their perspectives on evacuation, as described in this article.

"The evacuation that occurred back in 2015 was so disorganized. Everyone was transported out of the community by school bus/or personal vehicles. It was very uncomfortable as the school bus seats are hard, and there is no airconditioning. Some elders are in wheelchairs but a school bus does not have a lift. A charter bus would be much more accommodating for elders."

-Evacuee, Stanley Mission, Saskatchewan

On-the-ground Perspective (continued)

"One thing to consider when talking about transportation during an evacuation is that school buses are not acceptable for long trips. They do have not washrooms and for Elders and children, it is just unacceptable. Most of our band members are being transported many hours away from their home communities. Storage for everyone traveling is also very limited on a school bus. We had problems with walkers and wheelchairs being transported. If an accident were to happen while in transport the outcome would be tragic.

Also, we need to think about the feelings our Residential School survivors have when boarding buses. This one action brings up many emotions for all survivors as this was how they would have been taken away from their families. For some, even the smell of the diesel gas is a trigger. The ride itself has to be devastating!

I know the cost is higher for chartered buses but it must start being the norm. Also, we need to have more ... First Nations communities helping each other so that the impact is not so devastating. Evacuations should be to neighbouring communities first before we are sending families to far-away big cities. And of course, this all goes back to every First Nation having a plan in place and making those arrangements in writing first. If plans are made beforehand it gives each First Nation the control they need and deserve during a crisis. Every single detail about your people should be thought of during the planning stage."

-Michelle Vandevord, Manager, Saskatchewan Emergency Protective Services, First Nations Emergency Management

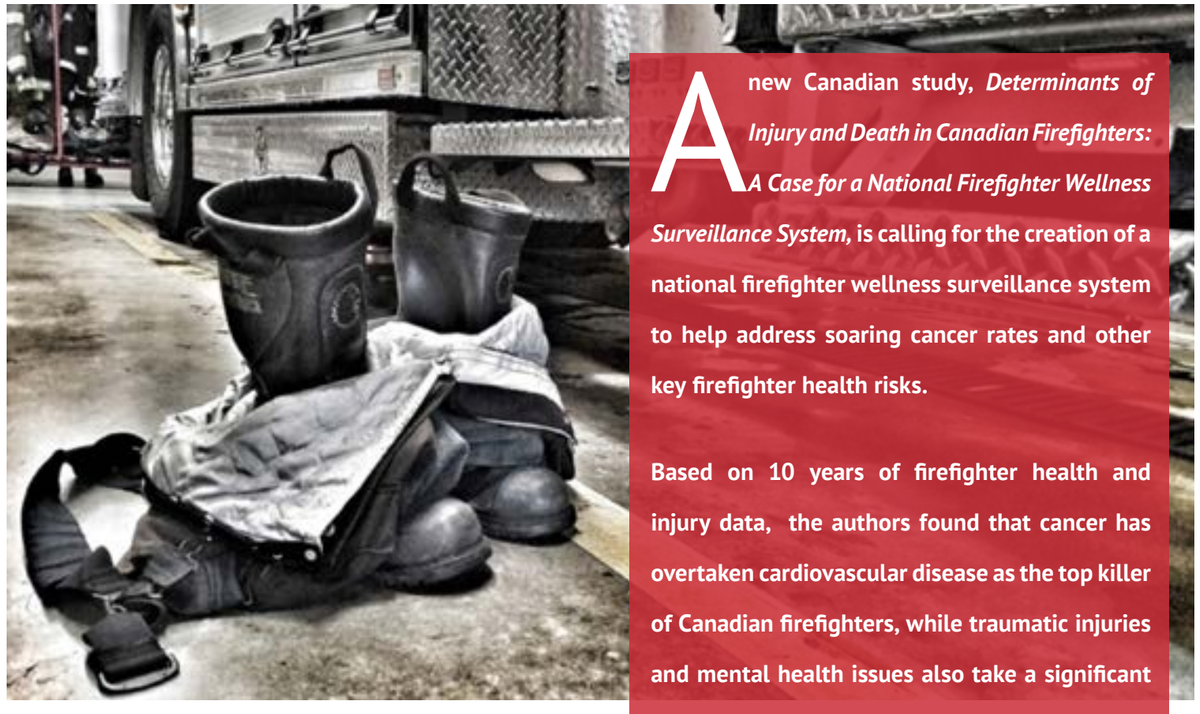
Additional resources on the topic

From Displacement to Hope: A Guide for Displaced Indigenous Communities and Host Communities

This guide, funded by Indigenous and Northern Affairs Canada (INAC), makes recommendations on how to better address the needs of First Nations communities who have been evacuated in order to avoid further harm to their residents. These recommendations address the need to develop pre-event planning strategies, guidelines to better manage the evacuation process itself including initiatives and services to increase the support to evacuating communities, and guidance to host communities to better meet the needs of evacuated residents.

A study calls for firefighter wellness monitoring to address cancer and other risks

By Len Garis



A new Canadian study, *Determinants of Injury and Death in Canadian Firefighters: A Case for a National Firefighter Wellness Surveillance System*, is calling for the creation of a national firefighter wellness surveillance system to help address soaring cancer rates and other key firefighter health risks.

Based on 10 years of firefighter health and injury data, the authors found that cancer has overtaken cardiovascular disease as the top killer of Canadian firefighters, while traumatic injuries and mental health issues also take a significant toll.

Firefighting is a risky profession

We identified the top health concerns facing Canadian firefighters based on research from 2000 to 2017, and worker claims data for 2006 to 2015 from the Association of Workers' Compensation Boards of Canada and WorkSafeBC.

"Taking a fresh look at the data helps to ensure that the measures taken to improve health and prevent injuries among firefighters are relevant and effective," noted Ramsden, the lead author. *"Through this study we see that firefighter health risks evolve over time. This points to the need for a method of continually collecting and analyzing firefighter health data, so that the interventions can remain in sync."*

Firefighting is a risky profession. Career firefighters have the second highest injury rates among emergency responders. Risks include extreme temperatures, physical injury, falling objects, diseases, toxic substances, violence or other traumatic events.

Ten years of worker claims data shows:

- Cancer represented more than 86 per cent of all fatality claims – an annual rate of 50 fatalities per 100,000 firefighters.
- Traumatic injuries (such as muscle strains and sprains, extremity injuries and burns) accounted for 90 per cent of all time-loss claims – about one in 50 firefighters each year.
- Mental health issues (such as anxiety, post-traumatic stress disorder and depression) were the third leading cause of time-loss claims – about one in 5,000 firefighters each year.
- Cardiovascular disease accounted for five per cent of fatality claims. Formerly the leading cause of firefighter death, it is now the third – although still the leading cause of on-duty death.
- Respiratory disease accounted for just under two per cent of all fatality claims

Firefighters at extra risk

Based on 2013 Statistics Canada data, firefighters die of cancer at two to three times the rate of the general population (depending on age). Although firefighters tend to lead healthier lifestyles, they are exposed to concentrated carcinogens in the air, soot and tar at the fire ground. The effect is cumulative: cancer time-loss claims peaked at ages 55 to 59, and most cancer deaths occurred over age 65.

The research has implications for the 100,000-plus volunteer and career firefighters across Canada, as well as those abroad.

"We see this study as part of the ongoing effort to make firefighting a safer profession" noted Mike Hurley, Vice-President of the International Association of Fire Fighters' 6th District, representing BC, Alberta, Saskatchewan, the Northwest Territories and the Yukon. *"We welcome any effort that helps us to better understand the risks to firefighters, and to identify what can be done to reduce them."*

Reducing risks

The study calls for a dedicated firefighter health surveillance model to monitor trends and patterns, and provide the information necessary to support future research and develop timely and responsive interventions that will lead to healthier and longer lives for Canadian firefighters.

"We know that firefighters are at an increased risk for certain types of injury, disease and death, and those are the issues where we need to be directing our resources" said Dr. Pike of the BCIRPU, adding that fire departments could have a marked impact on firefighter health by being more proactive about cancer, traumatic injury and mental health.

Conducted by the British Columbia Injury Research and Prevention Unit (BCIRPU) and the University of the Fraser Valley (UFV) in BC, the study was released in February 2018 by Rachel Ramsden, Jennifer Smith and Kate Turcotte from the BCIRPU; Len Garis, City of Surrey Fire Chief and UFV Adjunct Professor; Dr. Kenneth Kunz, a medical oncologist; Dr. Paul Maxim, a researcher and Wilfrid Laurier University Professor; Larry Thomas, City of Surrey Deputy Fire Chief; and Dr. Ian Pike, BCIRPU Director and University of British Columbia Professor.

Further information

The work was funded by the Motorola Solutions Foundation grant program, which supports and advances public safety programs and science, technology, engineering and math education.

The study can be downloaded for free

Len Garis is the Fire Chief for the City of Surrey, BC; an adjunct professor in the School of Criminology and Criminal Justice and associate to the Centre for Social Research at the University of the Fraser Valley; a member of the affiliated research faculty at John Jay College of Criminal Justice in New York; and a faculty member of the Institute of Canadian Urban Research Studies at Simon Fraser University. Contact him at LWGaris@surrey.ca.

From Ember to Inferno

By Shaun Koopman

When a two-hectare wildfire began west of 100 Mile House, on July 6, 2017, it marked the beginning of the critical stage of the 2017 wildfire season in British Columbia. By the next day over 50 new fires had started, leading to a declaration of a state of emergency that lasted until September 15. All in all, between April and November, more than 1,300 fires engulfed the province, costing BC more than $564 million. The 2017 fire season was notable for three reasons: first, for the largest total area burnt in a fire season in recorded history; second, for the largest number of total evacuees in a fire season; and third, for the largest single fire ever in British Columbia.

On October 21, 2017 I sat down with Kerri Mingo and Liz Jones, the Emergency Social Service (ESS) Directors for 100 Mile House in BC to discuss their experience leading the ESS response in their community. As of that date they were on day 71 of the response phase and had not finished their full debrief.

What were some of the main successes of this season?

Kerri: Our team was the main basis of our success. The response was long and hard, but our main core of volunteers really stepped up and when we had walk-in volunteers they were amazing as well. I think the response was successful all the way around, especially because nobody got hurt.

Liz: Lots of things that went well. Our team came together immediately, even though the majority of our team members were themselves evacuees. They showed up with all their belongings, set up, and went to work even while they themselves were under an evacuation order. My husband and I moved into the Group Lodging Centre on July 6 and on August 7 I was still there. The job we had to do gave us a focus and distracted us from the potential consequences of the disaster.

With nine volunteers, our team registered 3,000 evacuees in the first three days. Not one ESS volunteer signed out for the first three days. They might go home, but it was only for an hour or two, and then they would come back. I slept five hours in those the first three days. There wasn't even any time to sit down because we were tasked with so much and needed to be present both in the Reception Centre and the Emergency Operations Centre.

When it was time to evacuate, I was tasked with contacting other towns to see if they had room for us. We were told we couldn't go to Williams Lake because it was under evacuation order, Kamloops was full, and we couldn't go north. So we contacted Princeton, Kelowna, Chilliwack, and Vernon. While some communities said "we can take some of you" others said "we're full with our own problems." In the end we told our evacuees to go to Prince George or Kamloops, or to find a place with a relative elsewhere. Some evacuees were high risk, vulnerable populations the RCMP didn't know how to handle, and we evacuated them by bus to Prince George.

A challenge was that we needed help with transportation of evacuees because we don't have our own taxis or buses in 100 Mile. Nobody had ever planned for an evacuation of the town and even our ESS headquarters had to relocate. My husband and I stayed outside town that night in a tent and returned the next morning to see if we could help or if we had to leave too. Setting up mobile teams to go to evacuees in the areas no one else can get to, is not something that we've ever discussed in training, and I'm really proud of what we did.

Kerri: Three of the outlying communities not on evacuation order took it upon themselves to source their own food because we couldn't help everybody – which is hard to acknowledge. For example, Forest Grove got their food by having 52-foot reefer trucks come in via logging roads.

Liz: Lac la Hache is an island that was in the middle of an evacuation zone that struggled to get food. Because they couldn't get food or fuel, we had to make sure that we were getting food up to them. We did this by working with fire departments and food banks. The POD system was a challenge, but I think it showed our ability to come up with new plans under pressure.

The new links we developed with the First Nations was another positive outcome. We have a connection with our First Nations communities now and they are now going to come to our training sessions in the future. When we had to evacuate Canim Lake, that taught us humility and patience. We saw a sense of community that we don't see in settler communities of European-descent. With all the First Nations training that I've done, I find the sense of entitlement that can come from settler communities of European-descent very depressing. I was brought up that everyone is the same, so I've always struggled with that sense of entitlement, but during this response it hit me especially hard. We'd tried to make a connection before, but it was difficult. Yet this time there was more of a breakthrough, in that settler communities of European-descent realized that they may need some help, and we learned how we can better support relationships with First Nations in the future.

What were the main challenges of this season?

Liz and Kerri: The biggest challenge was no matter how many times we went to fairs and public meetings, people still didn't know what Emergency Social Services was. Another challenge was that throughout communications with the Cariboo Regional District (CRD), they did not really have a live picture of the scope and magnitude of the situation we were dealing with. They assumed we had an office and an ESS company phone and that we were established in a location. They didn't believe it when we told them we didn't have an office. Kerri took a picture of Liz's keep and the trailer and sent it to the Provincial Emergency Coordination Centre in Victoria telling them "this is our office."

We were not provided with the items we needed to do the job correctly. The CRD wanted to do conference calls and communicate via email, but my phone wasn't capable of it. I could only get internet in the kitchen in the Reception Centre. We even lost radio and computer power for awhile. Also, when we were evacuated my computer was not packed.

Big city governments do not think outside of their urban centre. They don't realize what it's like in a small town. The CRD didn't realize the lack of services our types of communities have – we don't have taxis, and a lot of locations around town don't have cell service, so people would have to go door-to-door for evacuation alerts. Many people in our remote communities did not know when a public meeting would take place, where to register, or even that they were under an evacuation order.

What ESS capacities could be enhanced in the future?

Kerri and Liz: There is no way we could have been fully trained for this. But the training we did have was set up well and taught us to think on our feet. If this happens again, we know we can do it, but better. There is always room for growth. Sharing what we did with other communities would be great for training.

> **We also need the province to recognize what ESS responders go through during a disaster. If we had more volunteers we could send more people into the communities to help, but we only have a small pool to draw from. Having had this event will help in the near future. But as the years go on if there isn't another major disaster, then awareness will drop. In our area, disasters seem to happen every seven years: 2003 Barrier Fire, 2010 Buffalo Creek Fire, and this event in 2017.**

Was there a particular group that required assistance the most?

Kerri: We have an older population that needed lots of assistance being evacuated as well as help with smoke and other health issues. Many of them had low mobility. We had one lady who went to sleep without her hearing aids in, did not hear any evacuation messages, and got up in the morning wondering where everybody was. Her door had been knocked on several times but because of her impairment she hadn't heard it.

The other group of people who needed a lot of assistance were the ones with mental health issues. 100 Mile has a surprisingly large number of folks who have mental health challenges. We also have a large population of people who live in the park.

Liz: There was a guy with a bike who slept under the stairs. We had to shelter a lot of people in ways that worked for them, to keep them safe and out of the weather.

One lady had just given birth to a baby in Kamloops, who then found out she had been evacuated and couldn't go home. We couldn't find a hotel for her and her baby, so we put them up in a special room where we could keep them together as a family unit. For people who couldn't be parted from their animals, we gave them quiet back corners with cages.

Kerri: That was a concern too, because there weren't supposed to be any animals in a Reception Centre or Group Lodging Facility!

Liz: The First Nations evacuees were especially grateful to be kept together as a family unit. Often they would say "thank you for letting us stay together."

What would you like to share with other ESS across Canada with regards to volunteer management (for example, managing burnout), logistics, communications, etc.?

Kerri and Liz: We're hoping next time when we request help from the Emergency Operations Centre (EOC) that our request isn't seen as frivolous; rather, the EOC would understand that it's because we need it, and that they should send help. This trust has to be better established at the local EOC level. We shouldn't have to be assertive, to insist that someone is supposed to get us a resource. When resources didn't arrive or were redirected, we rarely received a follow-up as to why it had occurred. Or if we received a rare follow-up, we had already gone on to find the resources that the EOC was supposed to find for us. As ESS, you better expect to wear many hats, even some that aren't part of your typical job description.

After a series of wildfires in BC in 2003, the Canadian Disaster Animal Response Team (CDART) was founded to provide emergency services for domestic animals, as well as train volunteers to rescue and provide emergency shelter for domestic animals during disasters.

It is ironic that CDART's assistance in the 2017 BC wildfires actually started with our deployment to a flooding event, near Merritt. While responding to the flood, we were further deployed to the first fire in Kaleden, and then later to fires in 100 Mile House, Princeton, Kamloops, Interlakes, Summerland, and Cranbrook. These incidents pushed our organization to the brink, in turn revealing a number of lessons for CDART as we move forward.

Lessons learnable

By Cheryl Rogers

Volunteer Shortages

Assisting in fires in multiple venues drained our limited qualified human resources, highlighting our need for more trained volunteers ready to deploy. In addition, trained animal disaster responders, like other emergency responders, follow the Incident Command System (ICS); attempting to involve volunteers who are not familiar and comfortable with ICS can create organizational problems that take time away from the critical task of saving animals. We also lacked trained volunteers with past disaster experience who were willing and able to take on leadership positions.

Given the magnitude of the forest fire situation in 2017, CDART needed more volunteers than ever before and accepted many convergent – or walk-in – volunteers who stepped up to help. However, we require that untrained volunteers at least have animal handling experience and people untrained in ICS were placed with a trained buddy. Additionally, animals needed to be moved using trucks and trailers, so volunteer haulers were very important to our efforts, but haulers had to agree to comply with our rules and work under ICS.

Despite these additions, fatigue reduced the numbers of volunteers as the summer progressed and we continued to find ourselves shorthanded.

Communication Challenges

A lack of community preparedness for emergencies in towns in which we were working created difficulties for CDART that were exacerbated by the many simultaneous fires. Many towns had no pre-identified sheltering locations for animals or pre-identified resource lists for food, supplies, or veterinary care. In our rush to obtain resources, confused communications sometimes resulted. Many people attempting to help dropped off supplies they saw as necessary, whether or not these were actually needed or expected. These unsolicited contributions made inventory management a challenge, as we found ourselves dealing with overloads of some items at the same time as we were in danger of running out of others.

Meanwhile, a lot of our time and energy had to be directed to monitoring social media to correct misinformation and defuse panic caused by hysterical posts and reactions. In a disaster situation, social media can create as many problems as it solves, due to inability to control the message. In this situation, social media created an upsurge in the number of rogue rescuers jumping in to "help," but without understanding what was needed, reporting to anyone in authority, or documenting what they had done. Some of these individuals took animals without permission or lacked a plan for returning the animals home once it was safe to do so. Still others overloaded or incorrectly loaded trailers. These individuals created havoc as well as dangerous situations that put both animal and human lives at risk.

Other animal welfare groups who wanted to become involved in animal rescue as the summer wildfire season continued could be difficult to coordinate and collaborate with, because very few had disaster experience or familiarity with ICS. While some understood what was needed, others failed to fully register that we were in an emergency situation in which our priority was to assist all evacuees, whether animals or people.

Other Lessons Learned

A need for better integration of animals with the human responses became readily apparent over the summer, as local emergency management demonstrated a lack of awareness about the existence of CDART, the services we can provide, or the value of our expertise in the field of animal disaster response. In some cases, our volunteers had difficulty obtaining access to areas where animals were in need of help. In others, chaotic communications and poor collaboration required us to meet inconsistent and changing requirements to enter evacuated areas to save animals.

As professional responders, CDART does not try to talk our way past roadblocks, but always complies with the rules governing entry. We appreciated it when requirements controlling access to evacuated areas were stable and consistently applied by authorities. This was especially true in situations where we maintained animals in their places (feeding, watering, and cleaning), when our volunteers needed to be able to return regularly to properties, and when difficulties with re-entry caused delays resulting in anxiety for both volunteers and owners.

We also learned we needed to improve our communication with owners. Human resource shortages over the summer meant we had to prioritize evacuating, sheltering, and caring for animals over providing regular updates to owners. But for worried owners – even those following us on Facebook or helping out at our shelters – nothing could replace personal communications about the status of their animals.

Finally, we observed that as the fire situation continued to expand, we came to neglect demobilization and worker care, and proper debriefs weren't always conducted in a timely manner. Even our ability to feed volunteers became inconsistent. During most disasters, Emergency Support Services (ESS) arranges food for CDART volunteers. However, during the 2017 wildfires, due to the excessive demand on the ESS resources, it was sometimes difficult to obtain meals for volunteers at some sites. Further, many volunteers and even coordinators did not want to take breaks and had to be told to stand down, while some volunteers took too much time away from their families, jobs, and lives.

The rolling fires also meant that acknowledgements of donations and other services rendered suffered delays and on occasion fell through the cracks in the aftermath. When people support you, they have a right to be recognized in a timely manner. Because of the focus on animal care throughout the summer, CDART personnel, who are all volunteers, needed a lot of time to catch up with everything else once the wildfire responses were over.

Cheryl Rogers is a chartered professional accountant and has been involved as a volunteer with disaster response for animals since 1999. She is a founding member and national coordinator of the Canadian Disaster Animal Response Team (CDART), and does public presentations and training on animal disaster response.

CDART was founded in 2003 after wildfires in BC to provide emergency services for domestic animals and to train volunteers in order to provide emergency shelter and rescue for domestic animals when responding to a disaster. CDART recognizes the value and importance of maintaining the human/animal bond, especially in disaster situations.

Watch a heartwarming reunion with rescued goats and their owner in Princeton, BC in July 2017.

Meet Marshall, lost and found during the Fort McMurray evacuations.

Michelle Coutu told CBC News that there was no advance notice and with the sight of flames Coutu crammed her daughter, grandson, and three dogs in the back of her truck.

"All I could do is let Marshall out of his pen and put some food down and pray for the best."

Coutu's family posted about Marshall online. When Alberta RCMP posted a photo on Twitter of a constable feeding watermelon to a pig, a Facebook group set up to reunite Fort McMurray's lost animals recognized Marshall, and flagged Coutu.

It wasn't Marshall's first experience with an evacuation from Fort McMurray.

"Last time, the RCMP helped load him up and that was about three years ago for the Clearwater River flood that just about washed out the bridge – so it was a mandatory evacuation then".

Illustration by Cheyenne Cockerill, Selkirk High School student, Selkirk, Manitoba as part of HazNet's EMERGENCE initiative: www.haznet.ca/emergence

The Grenfell Tower fire and its impact

By Joana Duque McFadden

Grenfell Tower fire, 4:43 a.m.14 June 2017. By Natalie Oxford CC BY 4.0

With a growing population, more and more high-rise buildings are being built in cities globally. However, fire disasters like the Grenfell Tower tragedy have prompted many fire departments around the world to re-examine the ways in which they deal with fires in tall buildings – and with good reason.

In the early hours of June 14, 2017, a fire erupted from the fourth floor of the Grenfell Tower – a 24-storey residential high-rise comprised of 129 public housing flats – in the North Kensington, Royal Borough of Kensington and Chelsea neighborhood of West London, England. The fire, which ignited unintentionally from a fridge freezer, engulfed the entire building for two and a half days. This required the assistance of 40 fire engines and more than 200 firefighters, with rescue efforts supported by the Metropolitan Police Service, the London Ambulance Service crews and London's Air Ambulance. The rapid growth of the fire, which was accelerated by the building's exterior cladding, led to a total of 71 deaths and 70 injuries (Metropolitan Police News, 2017). Many factors played a key role in this tragedy that has led other countries to reevaluate their building regulations and modern fire suppression tactics.

In the aftermath of the fire, it was uncovered that the high-rise was not built with "fire resistant" materials or equipped with a proper sprinkler system, nor did it have a fire alarm within all floors to alert occupants to take action – all critical technologies that are meant to be in place to make residents less vulnerable to fires (Rogers, 2017). Following the discovery of the building's lack of defense mechanisms, it was also revealed that the emergency services efforts to control the fire were hampered in various ways. When the first fire engines arrived on the scene, a 30-metre high aerial ladder needed to reach the 10th floor was not readily available and only dispatched when the fire reached 70-metres high, rendering the ladder useless. Making matters worse, there was low water pressure. As well, an overuse of the radio system made it difficult for firefighters to communicate and receive a proper signal through several floors of concrete (Grant, 2017). From a preparedness standpoint, the combination of these factors increased the risk to the loss of life and of property. As we continue to develop our urban environments, it is important to minimize the likelihood of a major fire within high-rise buildings. Although most parts of the world may still build high rises with cladding, it falls on the fire departments to reconsider a more modern approach to tackling such risks. Fire Science researchers like Stephen Kerber, Dan Madrzykowski, and Paul Grimwood, to name a few, are paving the way by leading fire services around the world to reexamine fundamental practices by introducing modern suppression tactics suitable to combating high-rise residential fires (Roman, 2014). This has essentially led parts of the world like New Zealand, who do not have many high-rise buildings, to not only amend their building regulations to exclude cladding – an accomplishment before the Grenfell Tower fire – but also equipping their fire services with the necessary tools for suppressing future fires in tall buildings. As we approach the one-year anniversary of the Grenfell Tower tragedy, it not only highlights a social and political issue but also presents fire departments around the world with a lesson on fire suppression, one that may surely save lives and property moving forward.

Resources

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Joana Duque holds a Bachelor's degree in Disaster and Emergency Management with a minor in Geography from York University. Prior to that, she obtained a Journalism Print Diploma from Sheridan College. She is currently attaining a Project Management Certificate in the stream of Community and Health Service Management from Ryerson University. Her curiosity in emergency management came out of the 2004 Indian Ocean earthquake and tsunami disaster. As such, her interests lie in exploring various countries and their varied hazardscapes, and learning how best to prepare and mitigate for such hazards before a disaster occurs. This led her to a six-week national expedition and internship program through Massey University in New Zealand where she did an internship with the Fire and Emergency New Zealand National Operations' offices to learn what makes communities resilient and how they implement disaster risk reduction methods. She currently lives with her husband in Toronto, Canada. Joana is a freelance contributor for HazNet.

HazNet is a bi-annual magazine of the Canadian Risks and Hazards Network (CRHNet) that brings together the latest in research and practice to enhance resilience in Canada.

HazNet aims to facilitate public, professional and scholarly discussion through analysis, views, lessons learned, and insights into current and future issues of disaster risk reduction in Canada and internationally.

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- Initiate the development of a Canadian inter-disciplinary and cross-sectoral network of researchers, academics, and practitioners to enhance understanding of emergency management in all dimensions and help build Canadian capacity to deal effectively with threats and consequences from all hazards;
- Create a Canadian annual Symposium for dialogue focusing on disaster risk reduction and facilitate policy formulation and the adoption of best practices in Canada;
- Provide a Canadian venue to learn from the experiences of other countries by inviting internationally reputed scholars, practitioners, and participants to the annual Symposium and to share Canadian experience and efforts in disaster reduction;
- Publish a bi-annual magazine, HazNet, comprised of articles on a wide range of topics within the emergency management and disaster risk reduction sectors.

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