

wildfire

Centre for Wildfire Coexistence through proactive management and adaptation



UBC Forestry is leading the way for excellence in wildfire research, teaching and community outreach



The 2023 wildfires in Canada shattered century-long records, fueled by climate change and altered forest landscapes. Bold action is needed now to sow the seeds of resilient forests better adapted to more frequent years of intense and prolonged wildfires.

British Columbia witnessed the four most devastating and widespread wildfire seasons on record within the past seven years: 2017, 2018, 2021 and 2023. Over 5.8 million hectares of BC forests have been engulfed in flames, costing more than \$3 billion to control. Each year prompted provincial states of emergency and mass evacuations. Costs to the environment, forestry, agriculture and human health were up to \$24 billion in 2021 alone, according to the BC Forest Practices Board.

In 2023:



A record-setting 17.5 million hectares of forest burned in Canada



1 in 20 hectares, or 5% of Canadian forests, burned



Over 1,000 fires burned simultaneously, including 400 fires in BC alone

Revolutionizing Wildfire Preparedness in BC: Centre for Wildfire Coexistence

UBC Forestry's Centre for Wildfire Coexistence responds to an escalating need to proactively adapt forestry and land management practices with the aim of actualizing healthy and resilient forests and communities in a changing climate.

Led by proposed Chair for Wildfire Coexistence, Professor Lori Daniels, the Centre will support innovative approaches and novel discoveries co-created with other leading experts, Indigenous Knowledge Keepers, government agencies, private land owners and forest, fire and land management professionals.

Given our new climate reality, holistic and transformative changes to fire and forest management are urgently needed to achieve ecosystem and community resilience, and learn to coexist with wildfire.

A UBC Forestry initiative.

The UBC Faculty of Forestry is home to some of the most innovative minds and approaches to the profession. UBC Forestry’s interdisciplinary teams are globally acknowledged as leaders in forward-thinking research, education and community outreach. Students receive inspiring and cutting-edge education, preparing them to address some of the most pressing global challenges, including climate change mitigation, the movement to a circular economy, sustainable forest management, urban forestry, the integration of Indigenous Ecological Knowledge, biodiversity conservation and carbon sequestration.

UBC Forestry launches the Centre for Wildfire Coexistence.

The Centre aims to realize meaningful outcomes in the following areas:

- create healthy and resilient forests through community to landscape-level planning (LLP), and proactive management to help forests and communities adapt to a changing climate
- prioritize proactive management and eco-cultural restoration, including forest thinning and Indigenous cultural burning to increase forest and community resilience to megafires
- create a robust community outreach and education program to share knowledge and

ensure communities at the wildland-urban interface are prepared for wildfire

- advance research co-led by Indigenous firekeepers and Western scientists to share leading-edge knowledge with the global community

Over the longer-term, the Centre would seek to expand to partners down the west coast of North America, across Canada and internationally. The proposed Centre for Wildfire Coexistence opens up opportunities for additional funding to solidify a leading research cluster at UBC that would include an early career wildfire scientist in support of the Chair position. Additionally, it is our aspiration to recruit several community extension positions, to extend learnings into fire-prone communities and work proactively on solutions at a grass-roots level.


Fast Fact: Landscape-level planning (LLP) is the development of science-based land management plans for extensive areas within a region. These areas contain multiple watersheds and ecosystems with interacting land-uses. LLP is based on an understanding of ecological processes, including natural and human-caused disturbances and the impacts of climate change. LLP is underway across BC as part of the transformative change to land management to increase forest heterogeneity, restore disrupted ecosystems, integrate Indigenous knowledge with western science and improve resiliency to climate change.

The cost for wildfires in BC



* as of September 15, 2023

Year	Total Fires	Total Hectares Burned	Total Cost (millions)	State of Emergency (number of days)
2023*	2,154	2,386,453	>\$585.0	38
2021	1,642	869,279	\$718.8	56
2018	2,117	1,354,284	\$615.0	23
2017	1,353	1,216,053	\$649.0	70



Dr. Lori Daniels

Professor, Forest and Conservation Sciences, Faculty of Forestry

Dr. Daniels is an internationally recognized expert in forest ecology and the impacts of humans and climate change on wildfires. Dr. Daniels is familiar with British Columbia's diverse ecosystems and has a proven track record of Indigenous and community partnerships. As the proposed Chair for Wildfire Coexistence, Dr. Daniels will be positioned as a go-to expert in wildfire.

Awarded the 2023 Association of Fire Ecology Distinguished Leader in Research Award and 2020 Killam Teaching Prize in Forestry, she is a proven public educator, having given over 250 presentations, workshops and field tours to forest professionals and community and school groups. Since 2015, she has conducted close to 300 media interviews as a specialist. In 2022, Dr. Daniels was a panelist on the "Expert Roundtable on Wildfire and Forest Resilience" held in conjunction with the UN General Assembly (UNGA77) release of their report on climate tipping points.

Wildfire affects the health and wellbeing of both human and wildlife populations.

When fires approach communities, they force evacuations and can lead to property loss or, more devastatingly, the loss of life. For example, two people lost their lives in a 2021 catastrophic wildfire that destroyed 90% of the Village of Lytton, BC.

Areas scorched by flames also displace wildlife, pushing some species closer to extinction. When inhaled, the fine particulate matter present in smoke can have negative health effects on individuals, particularly those with respiratory or cardiovascular disease.

A 2021 study published in *Proceedings of the National Academy of Sciences* found that up to 50 per cent of air pollution particulate matter 2.5 microns or smaller found in some western regions of the United States is caused by wildfire — levels that have been ramping up over the past decade.

However, some fire is essential to maintain forest health.

While the megafires seen within the past decade are unprecedented in their scale and intensity, fire still plays an important role in forest health and renewal. It removes dry, woody debris from the forest floor that can fuel more intense blazes. It also clears the way for renewed plant growth, supporting forest rejuvenation and overall health.

Reconstructions from tree rings reveal that low-severity fires once maintained diverse, resilient forests across much of BC's interior region. These fires were ignited by both lightning and Indigenous fire stewardship.

“*Many of our tree species are adapted to diverse weather- and climate-related disturbances, such as fire, wind and insect outbreaks.*

But historical and evolutionary boundaries are being pushed.” – Dr. Lori Daniels

Wildfire: a success story

Proactive wildfire management can lead to more resilient communities. For example, the District of Logan Lake has been practicing landscape-level fuel management through a collaborative, community engagement approach with Indigenous communities,

local groups and the general public since the early 2000s. As a result, members of the community were better prepared during the summer 2021 Tremont Creek Wildfire near Logan Lake Community Forest, and not a single home was lost.

The impact of forest fires on our health:



- elderly and young infants are more vulnerable to the effects of wildfire smoke



- exposure to smoke can result in more visits to emergency rooms and doctors' offices, as well as hospitalizations



- smoke inhalation can increase respiratory issues and worsen heart and lung diseases



- the long-term health effects of smoke exposure are unknown

The climate is heating up, and with it the risk and intensity of wildfires.

NASA records reveal that the global land ocean temperature index in 1880 was around one degree lower than averages within the past eight years. The greenhouse gas CO2 — emitted in vehicle exhaust, coal fired power plant emissions, wildfire smoke and other sources — is trapping heat in the Earth's

atmosphere and driving climate warming, weather pattern changes and extreme weather events, such as heat domes. Drier, hotter conditions bake forest debris until they are tinder-dry, increasing the risk of severe wildfires that release more greenhouse gases, further contributing to climate change.

“The 2023 wildfires released 2.2 billion tons of carbon dioxide — more than 3 times all other sources across Canada in an entire year”



'Good fire' can curb the number of out-of-control blazes, store more carbon and reduce negative impacts on communities and ecosystems.

Indigenous Partnerships: Building New Relationships

The Centre builds on UBC Forestry's strong history of partnership with Indigenous communities. For several years, UBC Forestry has made strides to incorporate both Western science and Indigenous Knowledge systems into Faculty planning goals and curriculum. Leading Indigenous and non-Indigenous wildfire experts at SFU, UBC-Okanagan and Thompson Rivers University will also be engaged. Specific to the Okanagan, the Westbank First Nation and Okanagan Nation Alliance will be approached to participate in the Centre's work.

Community Outreach and Public Education

The Centre will develop and deliver public education on ecological restoration and wildfire risk reduction, including by organizing community townhalls; distributing educational and awareness-raising materials at community events; and presenting at national and international meetings and workshops. National connections can be facilitated through the Canadian Interagency Forest Fire Centre, Natural Resources Canada and the Canadian Council of Forest Ministers.

We need novel approaches based in contemporary science combined with Indigenous Knowledge to successfully coexist with fire in BC and beyond.

Engagement with Government Agencies

Government agencies will be approached to visit research sites and through other knowledge-sharing opportunities to ensure that research findings and best practices inform public policy. The BC Wildfire Service, part of the Ministry of Forests, is a current UBC Forestry partner that would link the Government of British Columbia to the Centre. In addition, Dr. Daniels currently partners with the First Nations Emergency Services Society and BC Community Forests Association. These connections would also be leveraged to bridge Centre undertakings with communities throughout BC.



Elephant Hill Case Study

Despite wildfire's reach, rural and Indigenous communities often bear more of the burden of wildfire than urban settings. The devastating 2017 Elephant Hill wildfire burned over 192,000 hectares in BC's southern interior, directly impacting the traditional territories of eight Secwépemc Nations. Research on post-fire ecosystem and community recovery by Dr. Daniels' research team contributed to the 2021 report by the Secwepemcúl'ecw Restoration and Stewardship Society.

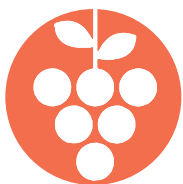
The 30 calls to action to improve proactive wildfire management and recovery included:

- long-term funding and capacity building support for Indigenous emergency management offices
- empowering Indigenous wildfire liaisons
- establishing a province-wide framework for land-based wildfire recovery
- supporting the joint development and implementation of landscape-level wildfire recovery plans with Indigenous communities

With the United Nations projecting an estimated 14% global increase in wildfires by 2030, and 30 per cent by 2050, BC's economy is likely to remain vulnerable to the affects of wildfire and smoke.

National Economic Impact

According to the Canadian Space Agency's WildFireSat monitoring system, Canada spends about \$1 billion annually combating wildfires. However, indirect costs are much higher. The \$24 billion spent in response to BC's 2021 fires stems from property loss, damaged infrastructure, industrial shutdowns, evacuations, health related expenses and economic losses in a variety of sectors, including tourism, forestry and energy.



BC vineyards

During the 2021 severe wildfire season in BC, vineyard yields dropped by approximately 30%. Wildfire prevention and preparedness can benefit BC's 451 licensed wineries, which employ over 12,000 workers.

BC Tourism

The wildfires and associated road closures, evacuations and potentially shortened or cancelled travel plans are an additional blow to tourism operators, hotels and restaurants who lost significant revenue due to the COVID-19 pandemic. The Cariboo Chilcotin Coast Tourism Association (CCCTA) reported that during the 2017 wildfires, 98% of businesses in the region experienced some form of negative impact to their operations, with an average revenue loss per business of \$73,000 and a \$55 million estimated direct revenue loss to tourism related businesses in the CCCTA region.

Fast Fact: Volatile phenols in wildfire smoke can damage grapes by binding to sugars and other compounds in their outer skin. These compounds are then released into the grape juice during the fermentation and aging processes, sometimes producing unpleasant aromas and flavours.



Funding Goal

To establish the Centre for Wildfire Coexistence, the Faculty of Forestry is seeking \$9.4M in philanthropic support.

Chair: \$2.4M

- supporting the establishment of a dedicated position in wildfire coexistence to lead research activities, community engagement and establish the Centre for Wildfire Coexistence

Research Fund: \$5M

- endowing a fund in support of the Centre for long-term, consistent, on-the-ground research. This will include recruiting bright and talented Indigenous and non-Indigenous graduate students and postdoctoral fellows to build Canada's capacity in educating the next generation of experts, and establishing partnerships with communities and allied organizations

Accelerator Fund: \$2M

- catalyzing support, this fund will be spread out over the first 5 years at \$400K per annum to immediately ramp up work and address the current high threat of wildfire

Through leveraging and grant applications at federal and provincial levels, the Centre will create an approximate \$15M investment in wildfire resilience and adaptation. This cluster of experts, leaders and community partners will help train the next generation of young scientists to be able to affect change and create resilient communities and ecosystems across BC.

Recognition and Celebration

The UBC Faculty of Forestry would be pleased to recognize and celebrate your donation in a way that is most meaningful to you, including, but not limited to, a celebratory event, a website article and recognition on research and public outreach materials.



UBC Forestry



THE UNIVERSITY OF BRITISH COLUMBIA

Faculty of Forestry

“*Together, the work of the Centre will advance wildfire research and community engagement toward transformative change.*”

– Dr. Rob Kozak
Professor and Dean,
UBC Faculty of Forestry

Moving wildfire resilience forward

With your support, we can realize climate-ready, co-created proactive wildfire management solutions for the health and longevity of our forests, ecosystems and communities. Please contact us to learn more about this opportunity:

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