

A spot along the edge of the fire that stopped just before reaching Yellowknife.  
Credit...Brendan George Ko for The New York Times



**By David Wallace-Wells**

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When the fires came to Yellowknife, the nearest safe-harbor city was more than 600 miles away, a full day's drive through dense smoke and flammable, nearly uninhabited forest in the infernal midst of Canada's worst wildfire season on record. And there was no plan for this. The region's largest city by far, Yellowknife was typically the place where everyone elsewhere in the remote Northwest Territories fled to when rushing to escape fire and flood, as many now did several times a year. When the unthinkable order to abandon the capital came on Aug. 18, there was nowhere else to go in the entire Northwest Territories, which is three times the size of California: Every other town and city but one were already under evacuation orders or alerts. Seventy percent of the population, across a half million square miles, had been ordered to leave their homes because of fire.

Just across Great Slave Lake, an entire hamlet was destroyed in hours, and a second fire spread over 30 miles in a single day. Just one road led out of Yellowknife, in fact one lane, and it was threatened by fire, too, with helicopters and water bombers sprinkling the highway ahead of the evacuation traffic so that tires wouldn't melt on the road. The evacuation route had no turns for 500 miles, the next gas station was three hours away and, when cell service vanished just outside town, all hope of communication and guidance disappeared, too. The smoke was dense for about an hour, one evacuee told me. "I had the N95 mask strapped close to my face, and I still could barely breathe," he said. "You've got to drive through the fire to safety."

In the end, Yellowknife was lucky, almost everyone I met there told me. People got out — a tribute to community resilience or local know-how or frantic leadership, depending on whom you asked. The territory's only proper hospital was evacuated, with some patients in long-term care forced to leave three different sites in a single week. The city of 20,000 was spared, as were many across the country, where despite an incomprehensible volume of coast-to-coast fire, not a single civilian died in the flames. Firefighting forces were stretched thin but fighting nevertheless — with direct attack, water bombers, fire trucks, helicopters, back burns, firebreaks, fire retardant, strategically schemed sprinkler systems for triage and old-fashioned bucket-brigade-style home-to-home structural defense. Outside Yellowknife, the fires had jumped first one impregnable firebreak, then another and then another. But then the conditions changed, a final break held and the flames stalled — lucky.

Luckier than Nova Scotia — where rarely more than a thousand hectares burn in a given year, but this year a single fire, the largest in recorded history, burned more than 20,000 and cast flames more than 300 feet into the sky, and another, outside the capital, Halifax, destroyed at least 150 homes.

Luckier than Kelowna, British Columbia, where stunned residents taking refuge on boats filmed whole neighborhoods burning on both shores of Lake Okanagan and firefighters endured what one of them on the line said "was like fighting a hundred years of wildfire in one night."

Luckier than nearby Hay River, which evacuated during devastating "worst-case" floods in the spring of 2022, and then again when fires came through from the east in May, destroying homes that were just being rebuilt. Fires came again in August, this time from the south, forcing those rushing out for the second time in three months to drive straight through wildfire flames and

causing others, encountering fallen trees on the road, to jump into the river for safety, all cell service knocked out and the sound of fuel tanks exploding to punctuate the impenetrable smoke.

Luckier than Enterprise, southwest of Hay River, where at least 90 percent of the town's structures were destroyed and just eight homes spared. At one point, the territory's environmental minister told me, in a four-kilometer radius around town, there were 330 separate wildfire hot spots.



Enterprise was one of the best-prepared towns in the Northwest Territories, and it burned in hours. Credit...Brendan George Ko for The New York Times

It was, all told, an ecologically unprecedented event. By the end of September, more than half of the world's countries could fit inside the land burned this year in the Canadian wilderness. Since the 1970s, the average area burned in the country had already doubled; this year, wildfires consumed that average six times over. The modern single-year record had been set in 1989, when almost 19 million acres burned across the country. In 2023, the total has passed 45 million.

"I can't think of any analogy for the extent to which the modern records were not only broken but destroyed here," says the fire scientist John Abatzoglou, who in July told me that the 8.8 million hectares on fire was "chart redefining,"

then watched as the burn area doubled from there. The fire historian Stephen Pyne calls it “mythology becoming ecology” — “a slow-motion Ragnarok.”

The climate activist Tzeporah Berman put it even more sharply to me: “It’s like our country exploded.”

**About 10 percent of the** world’s forest is Canadian, and in the past four decades, nearly a third of that land has burned. Dense British Columbia has come to epitomize this new era of Canadian fire — up there, some call it “British California” — but much of the country’s most remarkable burning takes place in the remote north, in the boreal forest of the Yukon, Nunavut and Northwest Territories. These stretch from Canada’s familiar forest-and-prairie landscapes up past the Arctic Circle, spanning more than a million square miles — an area larger than India — but they are home to just 120,000 people in total.

“Up here, in the landlocked subarctic, things seem to occur in outsized dimensions,” writes the naturalist John Vaillant, whose harrowing new book, “Fire Weather,” about the evacuation and destruction of Alberta’s Fort McMurray in 2016, has already become a sort of national touchstone in a year of unrivaled and even unimaginable destruction. “Lakes can be the size of inland seas and the trout inhabiting them can weigh a hundred pounds,” he writes. Large mammals outnumber people, and this year, for every single resident of the Northwest Territories, 220 acres of forest burned. “When you start talking about the vast expanse of the boreal forest of Canada,” the anthropologist Wade Davis tells me, “you could toss England in there, and the English would never find it.”

But the smoke finds you almost wherever you are. This year, toxic air from Canadian fires spread as far as the lungs of those living in Nuuk, Greenland, where there was darkness at noon in the capital in late September, and of those in Spain and Britain, who choked on Canadian ash in June. When the smoke from fires in eastern Canada spread south into the United States, parts of the Midwest and Northeast registered the worst air-quality readings anywhere in the world.

Carbon travels, too, upward into the atmosphere, where much of it will hang, effectively forever. This year, an estimated two billion tons of carbon dioxide were released by Canadian fires, roughly three times as much as was produced

by the whole rest of the country, which boasts one of the world's more conspicuous carbon footprints — three times as much as all of its cars and trucks and other transportation modes, its fossil-fuel industry and power plants and its infrastructure, agriculture and manufacturing.

In fact, here is a list of countries that, all together, have a smaller carbon footprint than this year's Canadian fires: Afghanistan, Albania, Angola, Antigua and Barbuda, Armenia, Austria, Azerbaijan, the Bahamas, Bahrain, Barbados, Belarus, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Costa Rica, Croatia, Cuba, Cyprus, the Democratic Republic of Congo, Denmark, Djibouti, Dominica, Dominican Republic, East Timor, Ecuador, El Salvador, Equatorial Guinea, Eritrea, Estonia, Estwatini, Ethiopia, Fiji, Finland, Gabon, Gambia, Georgia, Ghana, Greece, Greenland, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, Iceland, Ireland, Israel, Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malawi, Maldives, Mali, Malta, Mauritania, Mauritius, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Nepal, New Zealand, Nicaragua, Niger, North Korea, North Macedonia, Norway, Palau, Panama, Papua New Guinea, Paraguay, Peru, Portugal, the Republic of Congo, Rwanda, Samoa, Sao Tome and Principe, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Sudan, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sudan, Suriname, Sweden, Switzerland, Syria, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Uganda, Uruguay, Vanuatu, Western Sahara, Yemen, Zambia and Zimbabwe. Try to read every country on that list. The Canadian fires have released more carbon than all of them combined, much of it coming from remote regions of forest where fire control and suppression would be simply impractical even if it wasn't also, for reasons of forest ecology, inadvisable.

Fire people don't just talk about new scale, though, but new *kind*, with fires also releasing new weather: fire wind, fire whirls, fire tornadoes and fire thunderstorms, those last produced by pyrocumulonimbus clouds, or pyroCbs, which can reach 200 miles wide and stretch high into the atmosphere, carrying anything that's burned upward, and which can produce thousands of new strikes of what is called pyrogenic lightning, igniting potentially dozens of new fires anywhere within a 50-mile radius of the cloud. Once thought to be produced only by volcanic activity, wildfire pyroCbs were observed for the first

time in 1998. The previous global record for pyroCbs in a single year was 102, recorded in 2021, when Canada also set a national record with 52 of them. This year, the country has had 142 of them — almost 50 percent more in one country than the world as a whole had ever experienced in a single year before.

In 2016, the fire that tore through Fort McMurray jumped the Athabasca River — one of the region's iconic waterways and long regarded as one of Alberta's great natural fire breaks. This year, fires jumped Okanagan Lake — probably two miles clear across open water, individual embers the size of fists giving off enough heat that they were picked up by NASA satellites.

"There's no more, 'It can't do this' or 'It can't do that,'" says Jamie Coutts, a longtime wildland firefighter and fire chief who has played a central role in the response to a string of the scariest fire events in Canada's modern history. "*It can't jump the Athabasca — that's a kilometer. And it did it, just as we were standing still. It can't burn down the town. It can't spread into the neighborhood. It can't jump the lakes. It can't go up that mountain in one day. It can't travel 30 kilometers overnight.* All of these things," he says. "*In my 30-year career, I never saw that* — I've heard people say that almost every day this year," he says. "The unimaginable has to be imaginable now. You have to think that way."

In California, they talk about flames so hot that they turn the silica in the soil into glass. In Canada, you hear about limestone turned to powder and clay collapsing underfoot, too, or fires incinerating concrete, though you also hear about soil so hardened in the aftermath of fire that it is more like concrete, sealing out the rain and making future floods more likely. But fires can also burn underground, below the surface, out of reach of conventional firefighting, and sometimes through the winter in what are called zombie fires — burns believed to be dead and extinguished, only to flare up again after days or weeks or months. Firefighters now use their bulldozers, meant to forge firebreaks, to churn up dirt instead, getting three or five or seven feet below the surface to expose the underground fire and fight it there. Pilots flying water bombers often watch the water evaporate before it even reaches flame; others have reported branches striking their windshields at high altitudes. And at times the conditions get so bad — the winds too intense, the smoke too thick — that the planes can't even take off.

"We have to stop building houses in the middle of trees and act like they're not going to burn down," Coutts says. "When you knock a bunch of trees down and then you build houses there, you're just replacing the type of tree. You go from



a birch tree, a spruce tree, a pine tree to a house tree, and it's going to burn still."

"You're driving around, and there's just trees forever," says his son Ryan Coutts, now a fire captain in the Lesser Slave Lake region, which stretches from north-central Alberta to the border of the Northwest Territories. "You could just get lost. And we do. People get lost in there all the time — there's just so many frigging trees," he says. "When you look at the numbers, and you see, holy [expletive], that was a ton of hectares or acres burnt, you think, There's no way there's that many trees up there. But there is that many trees up here. I can go, and I can drive three hours in any direction and I cannot even see a burnt tree." The vast boreal forest is "absolutely gorgeous," he says, but firefighters often call black spruce, the region's most common variety, "gas on a stick." "I'll drive past on the highway, and there's a massive stand of coniferous trees — needles, spruce, pine — and you think, Holy man, that would go so fast."

"Every time you turn on the news, someone's getting burnt out, and in places you don't expect," his father says. "It wasn't just in one place in our country; it was everywhere in our country. We're used to the big fires, and sadly I've been through a couple — a town and a city kind of getting wiped off the map. But this year was even scarier, because there were so many, in so many places, in such a wide, vast area that you just knew you couldn't get to them all."

Coutts says he has been present for five of the 10 costliest disasters in Canadian history, all of them in the last 12 years. "It kind of reminds me of the 100-year flood," he says. "If the 100-year flood happens every 10 years, is it a 100-year flood? If the 100-year flood happens every second or third year, is it a 10-year flood? Is it just going to always flood?"



The hand of Cat McGurk, a carpenter and city councilor. Credit...Brendan George Ko for The New York Times



McGurk stayed behind in Yellowknife in August to coordinate the volunteer response to the fires. Credit...Brendan George Ko for The New York Times

**Up north, it was** hard to find anyone who wasn't speaking the language of climate alarm, or who had passed through the crucible of the fire season without seeming hardened or darkened by it. Those who stayed behind in Yellowknife sometimes described the episode of fire and evacuation crisis and local response as "the event" or "the incident" or just "Incident," as in, "During Incident," or "Incident isn't truly over," or "I had three men during Incident, and two of them were married."

After the evacuation, the town held just 1,600 people, a mix of firefighters and local officials and contractors and volunteers improvising a logistical support network for the defense of the city and the provision of basic services to supplement the scrambling government response. The contractors were working largely without contracts, and the volunteers — more than a hundred of them in total — were coordinated by Cat McGurk, a carpenter and city councilor, who sketched out a crisis-management organization chart on a whiteboard: water services, fuel, sprinklers, welding, pipe trades, brush and trash cleanup, bus service, food and transportation. A big red box, off to the side, was headlined "GAPS & RISKS."

"It was all totally unprecedented," McGurk says, "and what does that mean? It means the government can't really be expected to take care of it."

McGurk takes pride in being useful — "I can build a house. I can use a chain saw. I have bush skills and administrative skills. And I was like: This is my hometown. I can't just not do anything." The first thing was to put up Facebook and Instagram posts, looking for volunteers. "Sometimes the people were in government, and sometimes they weren't," McGurk says. "But we did it."

A transplanted New Zealander living on a houseboat on Great Slave Lake, the chef Niki McKenzie runs what she calls "the unofficial gay bar of the Northwest Territories" and found herself cooking first for 60 people who stayed behind and then 100 and then 200 and then 300 — raiding the pantries of local restaurants, then the supermarket and then the organic gardens left behind by evacuees. "I sort of watched the chaos happen with the evacuation order and the dust settle, and I was like, Who is going to feed these people?" At one point, she says, she was cooking almost a thousand meals a day, working shifts as long as 21 hours. "And I can tell you the moment that I knew that we weren't under threat anymore," she says. "I got the allergen list, and there was a [expletive] vegan on it. I've been cooking for people for eight days already, and all of a sudden there was a vegan?"



“It’s been wild and awful,” says Mayor Rebecca Alty, who met me at City Hall in September in furry slippers in a spirit of warm exhaustion. “It’s just nonstop,” she says: floods, Covid, fires. She worries about what would happen if an evacuation order had to be issued again in the next few years — would anyone listen? — and hears from constituents daily who tell her, “I just don’t know if I have the energy to pick everything back up and keep going.”



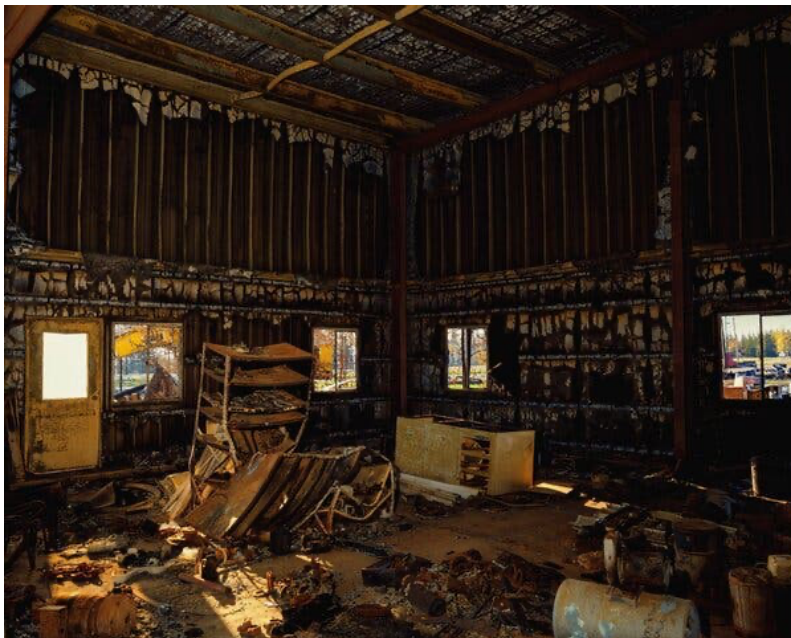
Mayor Rebecca Alty. Credit...Brendan George Ko for The New York Times

Once back, some Yellowknifers simply wanted to move on, but many others couldn’t talk about anything else: about the whiplash decision to evacuate after weeks of reassurance; about the elders, left to wait outside for airlifts without chairs or food or water for eight hours in the toxic smoke; about the homeless, gathered onto planes, without bags or IDs, and dropped in Calgary or Alberta; about the confused ones, the ones who’d never left the territory before, the ones who were lost down there. They talked about smoke, which kept returning even as the fires kept their distance, and about the terrifying prospect of fire seasons to come, beginning with next year, which was already predicted to be hot and dry again. “We’re not out of the woods by any means,” McGurk says. “And we never will be.”

In all, more than 200,000 Canadians have been evacuated this year, the largest set of such operations in Canada’s history. “We’ve had people who were evacuated once, then they were evacuated a second time, then they were evacuated a third time,” says Steven Guilbeault, Canada’s minister for the environment. “It is on a scale never seen before in our country.” Wanting to emphasize the country’s capacity for resilience, he points to an initiative to plant 60 million trees by the end of 2024. This year, by some estimates, five billion might have burned.

“The problem with those numbers — they’re so big that it’s actually hard to understand,” says Catherine McKenna, who preceded Guilbeault as environment minister and is now perhaps the country’s leading voice for climate action on the world stage. “But for most Canadians, everyone is starting to know someone that’s impacted — directly or being evacuated or their house is burning down or is close to a fire.”

Nearly everyone offered such stories — firsthand, secondhand, thirdhand. A Behchoko man whose gingerbread home, which he built with his own hands, burned down to the stone, which now cracked underfoot and could be tugged away in peeling layers like a snake skin. A Syilx Okanagan chief in British Columbia who watched a fire jump the local break and tried to alert the wildfire service, which didn’t have anyone on site, then helped issue a state-of-emergency declaration, an evacuation alert and an evacuation order, all in an hour. A onetime fighter pilot and former member of Parliament who rushed home to Kelowna from Vancouver, tracking the conditions on the British Columbia wildfire app, then watched his home burn through binoculars from across the lake, raking through the ash of his home a few days later to find only a single intact item — a porcelain miniature, depicting a Delft house, that he picked up years before as a souvenir from the airline KLM. “I think it’s exponential,” he told me. “I don’t think it’s linear. And with these fires getting bigger and more ferocious, if we don’t add more people and resources and a new concept of operations to deal with these fires, I don’t think we have a chance of keeping up with the devastation.”



Credit...Brendan George Ko for The New York Times



The remains of a building and trucks in Enterprise. Credit...Brendan George Ko for The New York Times

**When the town** Slave Lake in Alberta burned in 2011, it felt like a small-scale throwback to the great fires that engulfed Chicago and San Francisco — 400 homes destroyed and more than 700 people left homeless. When Fort McMurray burned in 2016, it looked like another step-change — not a remote town deep in the boreal wilderness but a major, modern, industrial tar-sands boomtown and a rapid evacuation of 90,000. But each has been followed by so many successive examples that they are now, distressingly, something like an annual event: Santa Rosa and Paradise in Northern California, Boulder in Colorado, Lytton in British Columbia and Lahaina in Maui, where a brush fire swept through the old Hawaiian capital, killing nearly 100 people. It was the deadliest American wildfire in more than a century.

Each of these is, to some degree, a climate story, but each is also a story about aggressive residential development into what is called the “wildland-urban interface,” or WUI. Today, more than a third of American homes are in the WUI, as are half of Canadian ones. “It is a beautiful place to live, until it goes feral,” Vaillant writes in “Fire Weather.” “When the WUI burns, it does not burn like a forest fire or a house fire, it burns like Hell.”

## More on Wildfires and Wildfire Smoke

- **Undoing Progress:** Two new reports have found that smoke from increasingly frequent and increasingly large wildfires has started to [undo decades of hard-won gains in air quality around the world](#).
- **Fighting the Wildfires:** Canada's record-shattering wildfire season has made it clear that traditional firefighting methods are no longer enough, experts in wildfires and forests say. [Here are the fundamental changes in strategy they suggest](#).
- **A Devastating Toll:** The blazes in Canada have led [tens of thousands of Indigenous people to flee their homes](#) and ravaged forests they rely on for sustenance.

If fire reaches a home, what lies inside matters, too. You may think of antique houses, full of what are called “legacy” furnishings, as worryingly flammable, because so much of those structures and what they hold is made of wood and fiber — tables and chairs, lace curtains and couches with cotton upholstery. “These will burn,” Vaillant writes, “but nothing like modern furniture, much of which is made of plastic, or wood ‘products’ bound together with glues and resins, upholstered with polyester or nylon, and stuffed with polyurethane. Today, it is common to find oneself sitting or sleeping on furniture composed almost entirely of petroleum products.”

In 2005, he recounts, an experiment was conducted to compare the burn pattern of a modern living room with a “legacy” equivalent. At first, the rooms burned in parallel, but after about three minutes, “something unexpected happens: the modern living room bursts into flame, engulfing everything from floor to ceiling as thick, oily clouds of black smoke billow from the entryway,” Vaillant writes. “What only seconds earlier had been a living room with a burning sofa was now raging like a refinery fire.” In the “legacy” living room, he writes, there was little smoke, and the fire could easily be extinguished with just a bucket of water.

The pattern is often the same outside the house. In Fort McMurray, “virtually every house and condo had its own grill supplied by a twenty-pound propane tank,” and “almost every garage and driveway had vehicles that had not been driven out,” Vaillant writes. Homes were burning in just minutes, even in the cool dark of night. “As each one was engulfed, its alarm would yelp briefly before melting as the tires and gas tanks blew up in rapid clusters: five tires and a gas tank, over and over again — followed or preceded at random intervals by the grill’s propane tank.” Fifty-ton houses, he writes, “incinerating like milk cartons in a bonfire.”



In the Canadian WUI, everyone knows the preventive protocol, called FireSmart: a suite of measures to protect homes, from clearing brush to planting fire-resistant vegetation, keeping propane tanks and lumber far from the house, and pushing the trees back too. But Enterprise was among the most FireSmart-forward towns in the Northwest Territories, the local fire information officer, Mike Westwick, tells me. And it was devastated in hours this August. “They had their fuel breaks built. They’d done all this great stuff to treat vegetation,” Westwick says. “But that day — that’s one of the scariest things I’ve ever seen,” he continues, recalling the images. “The sky was black, and the flame front was just so high coming right at the town.” The forecast had predicted 50-kilometer-an-hour winds, he says; they came in at 80 or 90, bellowsing black smoke far too thick to fly water bombers through. The fire spread over 50 kilometers that day, more than doubling worst-case scenarios. “It was a beast,” Westwick says. “You can’t put people in front of that. You could put an entire army of firefighters in front of that — it wouldn’t make a difference.”



“We told ourselves we were in control,” says Mike Westwick, the local fire information officer. “But some things are just more powerful than people.” Credit...Brendan George Ko for The New York Times

“We’re in this really unfamiliar territory,” Vaillant says. “Humans have always moved at a different pace than the natural world, but suddenly there’s a

syncing up, with the natural world now moving as fast or faster than we are — faster than humans, faster than technology, faster than history.”

“Our lives are a blink of the eye in the life of the forest,” Westwick says. “We told ourselves we were in control. But some things are just more powerful than people. And fire burning in the boreal forest under 80-kilometer-an-hour winds is one of those things.” When the fires raced into Slave Lake, the winds at their head were clocked at 125.

**Prophecies of** the climate future often appear like a nightmare wave crashing over the sand castles of civilization and leaving behind an utterly new landscape in its wake. Wildfire looks like a similar portent: awesome horizons literally set ablaze. But in other ways it is more of a throwback, a reminder of how much fire and how smoke once traversed the landscape more prolifically than humans, how intolerant we’ve grown of that history, in places like the United States and Canada, and how jealously we guard the gains of what we now know to call, with studied ambivalence, the Anthropocene.

Canada has always burned. But how much? Pyne, the fire historian, says he used to anchor his understanding of modern Canadian fire with the 2003 season in British Columbia, “which at the time seemed apocalyptic.” But more area has burned in the province in four of the last seven years — as it did in 2010 and 2014 and 2015 as well. “We’re riding the tiger at this point,” he says. This year, the total in British Columbia is 11 times as large as it was in 2003, and 200 times as large as it was in 2020.

In the United States, in recent years, fire scientists and forest ecologists have emphasized the complex human drivers of records like these — that beyond the effects of warming, the American West is dealing with a century of aggressive fire suppression and poor forest management, which together have produced a flame-prone landscape stretching across nearly half the continent and simply waiting to burn. The just-so story substitutes one morality tale for another: fire as comeuppance not only for profligate and irresponsible use of fossil fuels but also for reckless and counterproductive use of the continent’s “natural” landscape. But it is hopeful, too: If policy is to blame for the terrifying risk of out-of-control fire, in theory policy should be able to make it at least somewhat less terrifying too.

This is what the Canadian fire scientist Mike Flannigan calls “the American narrative,” and though some colleagues north of the border have “drank the



Kool-Aid,” too, he says, it does not so neatly apply across Canada’s diverse forest ecosystems — especially not the boreal, which has been subject to much less human intervention and which he describes as a cleaner case study on global warming and fire weather. Instead, he emphasizes what might be called the power law of wildfire spread. In Canada, 3 percent of fires cause 97 percent of the damage. Most fires are not hard to put out if you want to extinguish them and don’t spread very fast if you don’t. But on extreme “spread days,” the window for direct attack can be as short as 15 minutes, Flannigan says, and “if you miss that window, your cake is baked, the horse has left the barn, you’re out of luck.” And if a year with three or four truly dangerous days is followed by one with 10 or 15, the effect on total area burned can be not additive but multiplicative, with relatively small changes to patterns of extreme weather yielding world-changing volumes of fire. Across Canada, the fire season has grown by several weeks in recent decades.

Globally, the fire story is less exponential, with declines in burned area in sub-Saharan Africa mostly offsetting rapid fire growth in the major midlatitude hot spots, with the global trend in fire emissions, as a result, mostly flat. But in those major hot spots — western Canada and the western United States, Russian Siberia and Australia, which is now gearing up for what may be a catastrophic bush-fire season — the decades-long trends are clear: up everywhere.

Nearly everyone staring down the wicked problem of living with 21st-century fire offers a similar list of interventions. For the forest ecologist Rachel Holt, it starts with better forest policy, focused on a transformation of the timber industry and the restoration of more resilient landscapes, a more honest accounting of carbon emissions from logging and a more nuanced approach to fire management, including the cultivation of more good fire through controlled burning. “When there’s a raging wildfire, it seems futile, but you have to start local,” Holt says. If we manage the forest around my little town, well, maybe we can stop my little town from burning down,” she says. “Like all things climate-related, we have a massive problem, and there isn’t a quick way. There isn’t an easy solution. We have to get climate change in hand — now, in fact, yesterday. And if we don’t, it’s all a game.” She goes on: “It doesn’t matter what we do in the forest, things are going to burn. We’re going to pass every tipping point there’s ever been. And we’re hooped.”

And what about life on the other side of that? For a long time, those contemplating the climate future tended to focus on the risk of thresholds

being reached — the disappearance of the world’s coral reefs, say, or the irreversible collapse of the planet’s ice sheets, or the dieback of the Amazon rainforest. Increasingly, we are tiptoeing up to those thresholds, or fire-walking past them, and wondering what lies beyond.

In the near future, in Canada, the answer is going to be more fire. But further off, on those planetary time scales that once seemed to humans mind-bendingly long but may now unfold over just decades, the boreal future is shadowed by a vast and disconcerting uncertainty. You hear talk of “regime change” in the region: of “black areas” and “charred areas” and “moonscapes,” about “cohort failure” and “complete tree mortality,” of a shift from coniferous forest to deciduous forest and about the possible arrival of grasslands and an unmodelable future for peat and permafrost in the timeless-seeming north, where the boreal forest rose up after the end of the last ice age from land that had been frozen for millennia. Hardly anyone believes that the forest can survive regular seasons like this one. But what can?



“We’re not out of the woods by any means,” McGurk says. “And we never will be.”  
Credit...Brendan George Ko for The New York Times

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<https://www.nytimes.com/2023/10/24/magazine/canada-wildfires.html?smid=em-share>