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## A grim climate lesson from the Canadian wildfires

1 message

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Wed, Jul 26, 2023 at 11:29 AM

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OPINION

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Ibrahim Rayintakath

## For all our plans to control emissions, humans are no longer fully in charge



**By David Wallace-Wells**

Opinion Writer

You may have forgotten about the Canadian wildfires, once the smoke cleared from your American lungs and the orange disappeared from American skies. But the fires have not forgotten to burn.

In Quebec, more land was torched in the month of June than in the previous 20 years combined, with a single out-of-control “complex” there growing to 2.5 million acres — in a section of the province where, in recent years, the average

total has been a tenth of that. Across the country as a whole, the total was more than 25 million acres, or about two and a half times as much land as had burned in any of the worst American seasons of the past 50 years, with most of Canada's fire season still ahead — putting the country on track to produce more carbon emissions from the burning of boreal forest than all of its other human and industrial activities combined.

“This year is different — this year is really different,” the ecologist Merritt Turetsky says. The fire scientist John Abatzoglou calls it already “chart redefining.” The writer John Vaillant — whose new book, “Fire Weather,” looks back at the catastrophic Fort McMurray fire in 2016 and forward to an entirely new global fire regime — calls it an “apocalyptic” scenario. “I never imagined pan-Canadian fires,” he says. “We’ve compressed about 10 years of anticipated fire into one-half of a fire season.”

Believe it or not, this is somewhat by design. Nowadays, the goal of most forest management in North America is to manage fire rather than always rush to extinguish it, to focus suppression efforts around denser human settlement and elsewhere to find ways to allow some burning. In the 20th-century model, firefighters parachuted in to snuff out flames, ultimately contributing to a continental buildup of the dry forest, grassland and scrub that fire experts casually call “fuel.” Now, to reduce it, fire scientists and forest ecologists try to cultivate more of what they call “good fire.”

But whose responsibility is the carbon produced when forests burn? In the age of extreme weather and climate agreements, the world has learned to tabulate ecological guilt nation by nation — cutting responsibility for the current crisis into so many slices of pie. Wildfire emissions typically aren't even recorded on the balance sheet of any particular country's ledger, but according to some tabulations, in 2021 wildfires in North America and Eurasia contributed more carbon dioxide to the atmosphere than any nation but China, the United States and India. And the toxic smoke exhaled from those fires increasingly travels elsewhere too, now regularly choking the air and blotting out the sun not just of cities built into nearby wildland but of major concrete megalopolises whole continents — or even oceans — away. Whose responsibility is that?

If the 20th century taught us the perversity of aggressive fire suppression, the 21st is already teaching us the limits of that lesson. A firefighting approach based on the principle that humans and human settlements should be protected but that otherwise forests should be allowed to burn is sensible if the

aim is to reduce property damage and loss of life. But if the costs to human health of wildfire smoke are larger than from the fires themselves, should the goal be recalibrated? Could it be? If the aim is to manage the health of the planet by limiting the emission of carbon from wildfire, what kind of approach does that require? Is it even possible? In California, the record-setting fire season of 2020, which produced five of the state's seven largest fires in modern history, also entirely erased its emissions gains over the previous 16 years — putting twice as much carbon into the atmosphere as had been saved by all of the state's decarbonization policies from 2003 to 2019.

Canada has a gargantuan per-capita carbon footprint, in fact by some measures larger than that of the United States. But it is not itself singularly to blame for the changes unfurling in its own remote forests or capable of truly controlling the new megafires that result.

Partly this is a simple matter of scale: Canada is the world's second-largest country, with a population roughly a quarter the size of Russia, which Americans often conceive as a vast expanse of uninhabited tundra. The 49th parallel is often thought of as Canada's southern boundary, but half of Canadians live south of it, clustered just in the little outcropping wedge of Ontario and Quebec tucked between Michigan and Maine. All told, it's estimated that 85 percent of Canadians live within 150 miles of the U.S. border — as though 284 million Americans all lived south of Los Angeles and Tampa, with the whole rest of the country untrammelled wilderness effectively left free to burn anytime lightning struck or a match was dropped or a power line fell.

But fire control is also growing harder because the fires themselves are changing. They produce such thick walls of smoke now that tanker planes sometimes can't fly into them; they throw embers over what were once considered uncrossable fire breaks; they burn and smolder underground through winter; they get so hot that firefighters risk second-degree burns just approaching them. "The most powerful firefighting equipment that humans have — Canadair planes that cost roughly \$35 million each and drop 30 bathtubs' worth of water at a time — can extinguish fires with an intensity of up to 10,000 kilowatts per meter of fire line," Henry Mance wrote recently in *The Financial Times*. "Today's mega-fires are a different order of magnitude, sometimes exceeding 100,000 kilowatts per meter" — 10 times as intense. Water dumped from above can evaporate before it reaches the ground.

The megafires routinely produce whole new fire-weather systems, including what are called pyrocumulonimbus clouds, laced with lightning and whipped by tornadoes, which can shoot toxic aerosols all the way through the troposphere into the lower stratosphere. It was long believed that only volcanic eruptions were capable of doing this. It wasn't until 1998 that scientists discovered pyrocumulonimbus clouds from megafires doing it too. So far this year in Canada, there have been 90 of them.

"They can't stop these fires," says the fire historian Steve Pyne. "I mean, they could have 50,000 firefighters there now and it's not going to change it. We could have 200 more air tankers. Are they going to be able to stop these fires that are going? No."

In "Under a White Sky," the writer Elizabeth Kolbert memorably posed the paradox of climate adaptation, in which the disruption of the natural world seems to require further interventions, this way: "If there is to be an answer to the problem of control, it's going to be more control." But the specter of hundreds of new fires raging near the Canadian Arctic — or in Russian Siberia or the Australian bush — is a reminder that when it comes to rolling climate change, total control, at least, may be an illusion, although one on which we have intuitively erected our hopes for navigating a hotter future.

"Humans have always moved at a different pace than the natural world," Vaillant says. "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." In the past, he says, "we've had a 'we don't negotiate with terrorists' attitude with nature — when it did things that we didn't like, we suppressed them. Fire is now forcing us to negotiate."

Negotiate with whom, though? In recent years, warming posed a number of thorny questions about responsibility and sovereignty in a time of planetary crisis: who might pay for climate damages punishing the global South but produced by emissions from the global North; how a net-zero world might respond to a rogue nation's recklessly burning fossil fuels; what could prevent single nations from undertaking adaptations that might wreck the microclimate of their neighbors; what damage could be wrought by a single billionaire's undertaking a global geoengineering scheme or a single terrorist cell torpedoing it.

These climate morality plays flatter our intuitive sense that humans, however irresponsible, remain in charge. But while emissions do control the planet's thermometer, the natural world is already bushwhacking its own path through the hotter future. "We're riding the tiger at this point," Pyne says. "I think all of us are going to have to accept there's going to be a lot more fire."

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