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How Long Will Canada Burn?

One thing is certain: More extreme smoke days are coming.

By Caroline Mimbs Nyce



Marc-André Leclerc/Canadian Forces/Reuters

The smoke is back. Large swaths of America are once again engulfed in a toxic haze that's drifted down from Canada, which is experiencing its worst fire season on record. Our northern neighbor has burned through a record-breaking 8.2 million hectares so far this year, sending smoke plumes as far as Europe. And, despite the best efforts of hundreds of firefighting personnel who have come from all over the world to pitch in, the fires don't look like they will be winding down anytime soon.

The problem is, Canada is not trying to put out just one fire. Right now, a map from the Canadian Interagency Forest Fire Centre shows a country spotted red with blazes, like it's come down with a nasty case of chicken pox. Remarkably, these fires aren't clustered in a single region: Their spread is the northern equivalent of New York and California burning at the same time, with additional fires stretched in between. According to the CIFFC, more than 509 fires are active in Canada, 253 of which are classified as "out of control."

Likewise, the smoke that's been descending over America isn't coming from one particular fire. It is the cumulative effect of all those burns, David Roth, a forecaster with NOAA's Weather Prediction Center, told me, though those closer to the border have more of an effect. Until the fires are fully out, Americans will remain at risk of more smoke days.

When will this all be over? In general, a fire can burn as long as it has fuel and oxygen and it's warm enough to do so. So how long do they typically go for? "That question does not have an answer—or at least not one that's satisfying," Issac Sanchez, a battalion chief for communications at Cal Fire, California's firefighting agency, told me over the phone. Even if we remove human firefighting efforts from the equation, different fires burn at different speeds and for different lengths, depending on where they are located and what is burning. "Every single fire is its own event," Sanchez explained. "It's got its own behavior. We can't attack them exactly the same way." Particularly nasty fires can certainly take weeks or months to resolve. California's largest fire on record, the August Complex, burned for 87 days, while its second-

largest, the Dixie fire, burned for more than 100 days. In 2017, Canada's Elephant Hill fire burned for well over two months.

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What's aflame matters. Grasslands burn rapidly, the same way a piece of paper you throw in a fireplace crumbles into ash long before the log beneath it does. A hillside in California can burn itself through quickly, while a more forested area, with thicker, denser brush, might linger. What vegetation is burning, how much, and how dry it is can speed up or slow down fires. Most of Canada is classified as boreal forest—chilly, northern forest—and much of the fire is happening in that kind of ecosystem. This type of forest tends to burn at higher intensity and over larger areas because of the kinds of trees and how densely packed they are, Piyush Jain, a research scientist at the Canadian Forest Service, told me. Some boreal forests contain peat, which can slow fire—if it's wet. But if that peat is dry, it can burn underground and spread fires even farther.

Weather matters, too. Hot temperatures supercharge fires; the wind spreads them. Snow and rain help dampen flames, sometimes ending fires altogether. Though precipitation doesn't always put them out entirely: In recent years, zombie fires in the Arctic have quietly smoldered under the snowpack throughout the winter, only to reignite in the following spring.

Lastly, where a fire takes place can determine its life span: Fires tend to burn uphill, and may struggle to jump a lake or a river. The area's topography also changes how accessible it is to firefighters. Remote, hard-to-access areas sometimes call for parachuting firefighting squads, known as smokejumpers.



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So—when will this all be over? In Canada, the mean duration of a fire that’s more than 1,000 hectares (or a little less than four square miles) is 23 days—or a little over three weeks, according to Jain. Meanwhile, a fire that’s more than 10,000 hectares (about 40 square miles) burns for a mean duration of 39 days. Some of the fires active now have been burning for weeks; others are just beginning: In the past 10 hours alone, CIFFC logged three additional fires.

And the currently entrenched fires are big enough that no one really can say how long they will drag on. “Some of these fires in [the] northern boreal forest of Canada right now are enormous,” Bruce MacNab, the head of Wildland Fire Information Systems with Natural Resources Canada, told me. “And it would take some huge rain events to completely stop them.” He believes that they likely will last “for some weeks yet.” Broadly speaking, Canada’s fire season tends to start waning by the fall. Karine Pelletier of SOPFEU, Quebec’s forest-firefighting agency, told me that, this year, barring many heavy periods of rainfall, the agency expects firefighting operations to last until September.

In the meantime, millions of Americans will have to brace themselves for more extreme smoke days. For exactly how long depends on a number of factors, including, quite literally, which way the wind blows.

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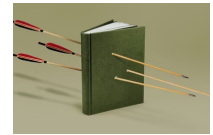
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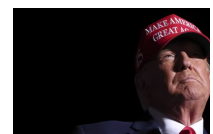
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