

# Tree loss due to fire is worst in far northern latitudes, data shows

**Forests in Russia are most affected, as scientists warn of escape of huge quantities of buried carbon dioxide**



A forest in Hukkajarvi, Finland near the Russian border. Most tree loss in the past 20 years has been from countries around the Arctic Circle. Photograph: Olivier Morin/AFP/Getty Images

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The boreal forests in the far northern latitudes have suffered more tree cover loss owing to fire in the last decade than any other place on Earth, with **Russia** losing more trees to fire than any other country, data has shown.

The boreal region is a huge stretch of **coniferous forests** that encircles the northern hemisphere taking in parts of Scandinavia, Estonia, Lithuania, Russia, Alaska and Canada, among other countries.

**Forest fires** in these regions are of particular concern, because they can result in the release of carbon buried deep within the soil, as well as the loss of the trees themselves. Trees in boreal forests take up to a century to grow back.

About 70% of all tree cover loss owing to fire in the past 20 years took place in northern boreal forests, with about 80m hectares lost over the period 2001 to 2021, according to **research published on Wednesday by Global Forest Watch**, an initiative of the World Resources Institute.

Russia has lost about 53m hectares of tree cover to fire since 2001, an area about the size of France. Canada has lost about 27m hectares to fire in the same period.

James McCarthy, analyst at the World Resources Institute and co-author of the report, told the Guardian: “This is very concerning. These findings should be a wake-up call to the world. Forests are our best line of defence against climate change, and should be at the top of our list [of priorities].”

He said the carbon released to the atmosphere by forest fires was creating a vicious circle of climate damage. “These forests can go from being **carbon sinks to being sources of carbon** in the atmosphere,” he said.

The common image of forest fires is in temperate regions, for instance in Europe and the US where fires have been increasing as hot dry summer weather has become more prevalent, and in **Brazil where fires started for deforestation have caused widespread devastation through the Amazon**.

But boreal forest has been warming rapidly and drying out, making it more prone to catch fire. **Heatwaves have struck northern Canada and Siberia in recent years**, and the Arctic has warmed much faster than the rest of the planet.

About a third to 40% of **boreal forest fires** are thought to start naturally by lightning strikes, but the other leading source of fires starting is people. Fires started by farmers for agriculture can rapidly spread to forests, particularly in Russia where controls are few and enforcement is lacking.

Fires account for about a quarter of tree cover loss around the world, with most of the rest taken up by deforestation for agriculture and logging. But the amount

of forest lost to fire has been increasing, making up about 30% of tree cover loss in 2021.

The amount of tree cover loss due to fire globally is increasing by about 4% a year, or about 230,000 additional hectares each year, about half of which is because of bigger fires in boreal regions.

Tree loss owing to fire is also increasing in the tropics, however, by about 5% a year or 36,000 additional hectares. Almost all fires in the tropics are started by people.

In the 10-year period of the study, the US lost about 12m hectares of trees to fire, and Brazil lost about 9.5m hectares, amounting to about 15% of all the tree cover lost in Brazil over the period. About two-thirds of the fire-related losses occurred in primary forests, which are vital not only for the climate but for biodiversity.

About 72% of Australia's tree cover loss between 2001 and 2021 was caused by fire, with extreme weather causing a significant increase in fires in 2019 and 2020.

The amount of tree cover lost to fire globally each year has increased by about 3m hectares since 2001, amounting to an additional area the size of Belgium lost to fire each year, compared with a decade ago.

Last year's fire season was the worst on record. Forest fires were responsible for an area of trees roughly the size of Thailand being lost, equating to about 16 football pitches a minute going up in flames.

This year's fires, with record-breaking hot weather in Europe, parts of the US, south Asia, parts of China and other places around the globe, are also likely to be severe. **An area one-fifth the size of Belgium has burned in Europe this year.**

Separate research has also recently shown that **boreal forest is expanding northward into regions that were previously Arctic tundra.**

Our knowledge of tree cover loss has improved markedly in the last decade, with satellite imagery giving a much more detailed view of what is going on beneath the tree canopy.

