

# Boreal Forests and Climate: 3 Trillion Trees in World

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A team of researchers recently mapped tree populations worldwide. (Photo : Crowther, et al)

Picture 3 trillion trees. See? You can't. We'd wager that none of us can see the forest *or* the trees at that rate. However, a recent study that mapped the world's trees, including great swaths of forest in northern and equatorial regions, found that they totaled around 3 trillion. This is roughly seven and a half times more than previously estimated. However, according to recent mapping, these numbers still represent a 46 percent decline in worldwide tree population since the beginning of human life on Earth, as a release [noted](#).

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The researchers used satellite images, forest inventories and supercomputer technologies. They collected tree density information for more than 400,000 forests worldwide.

"Trees are among the most prominent and critical organisms on Earth, yet we are only recently beginning to comprehend their global extent and distribution," Thomas Crowther, lead author and a postdoctoral fellow at the Yale School of Forestry & Environmental Studies (F&ES), said in a [news release](#). "They store huge amounts of carbon, are essential for the cycling of nutrients, for water and air quality, and for countless human services. Yet you ask people to estimate, within an order of magnitude, how many trees there are and they don't know where to begin. I don't know what I would have guessed, but I was certainly surprised to find that we were talking about trillions."

The previous global estimate was 400 billion trees worldwide. This would equal about 61 trees for every person on Earth. For the recent estimate of over 3.04 trillion trees, there are 422 trees per person, the release noted.

Using data collected from forests, the researchers were also able to assess how the size of tree populations was related to climate, topography, vegetation, soil condition, and human impacts, according to the release.

"The diverse array of data available today allowed us to build predictive models to estimate the number of trees at each location around the globe," Henry Glick, second author and a Yale postdoctoral student, said in the release.

The researchers also found that tree density can vary greatly among forest types. They reported that [boreal forests](#) in sub-arctic regions of Russia, Scandinavia, and North America had the highest tree densities. However, the tropics had the largest forested areas, housing 43 percent of the world's trees in total.

The researchers further explained how climate could help them predict tree densities. For example, in wetter areas more trees are able to grow. However, this was reverse for some regions, since humans generally prefer these conditions for agriculture use. Crowther noted that human activity is the largest driver of tree numbers worldwide, in the release.

"We've nearly halved the number of trees on the planet, and we've seen the impacts on climate and human health as a result," Crowther said in the release. "This study highlights how much more effort is needed if we are to restore healthy forests worldwide."

Their study was recently published in the journal [Nature](#).

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