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science alert

Scientists Studying Earth's Trees Issue Stark Warning to Humanity

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By [TESSA KOUMOUNDOUROS](#)

The research was published in [Plants, People, Planet](#).



The rare and unusual dragonsblood tree. (javarman3/iStock/Getty Images Plus)

From soaring coastal redwoods to [dinosaur-era Wollemi pines](#) and [firs](#) that make the perfect [Christmas trees](#), even our most revered woody plants are in an awful lot of trouble.

But it turns out that losing some species won't just endanger local forests; it will threaten entire ecosystems, research shows.

In 2021, a [global assessment titled *State of the World's Trees*](#) found a shocking one-third of all tree species are currently teetering on the edge of existence.



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This amounts to about 17,500 unique tree species that are endangered.

That's more than [double the number of all threatened tetrapods](#) (mammals, birds, amphibians, and reptiles).

Some trees are so rare that [only a single known individual remains](#), like the lonesome palm in Mauritius, *Hyophorbe amaricaulis*.

In a [subsequent study from last year](#), the same researchers issued a "warning to humanity" about the consequences of these losses, backed by 45 other scientists from 20 different countries.

Conservation biologist Malin Rivers from Botanic Gardens Conservation International and colleagues outline the many impacts these losses will have on our economies, livelihoods, and food.

Most of our fruit comes from trees, as do many nuts and medicines, with non-timber products amounting to [about US\\$88 billion worth of trade](#).

In the developing world, 880 million people rely on firewood for fuel, and 1.6 billion people live within 5 kilometers (3 miles) of a forest, relying on them for food and income.

All up, trees contribute about US\$1.3 trillion annually to the global economy, yet we're destroying billions of them every year – [clearing massive tracts of land](#) for farming and development.

Trees are each their own little worlds, teeming with all sorts of single- and multicellular-life forms, including other plants, fungi, bacteria, and animals. Lose a tree, and this entire world dies too. They often form the supportive base for the [whole web of life around them](#).

In fact, half of all the world's animals and plants [rely on treed habitats](#).

"Habitat loss is frequently tree loss, it is at the root of that when we look at extinction concerns for animals or birds," Rivers [told](#) Nature World News in 2022.

"There is no way we can take care of all the other creatures there if we don't take care of the trees."

As with all living systems, losing diversity makes the [whole jumble of living connections](#) more vulnerable.

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This is because less variation means less diversity in immune response, in genes, and responses to environmental conditions, meaning lower chances of surviving the many threats battering the complex web of interactions that is life on Earth.

Some tree species provide unique interactions and can't be replaced by other species.

This includes the distinctive dragonsblood trees ([Dracaena cinnabari](#)), leftover from the ancient [Oligocene](#) woodlands, which are host to many other species that are entirely dependent on them, including [many other plants](#) and the [gecko that pollinates it](#).

So the extinction of a single species can cause a massive domino effect across everything else that interacts with it, [even if they're already rare](#).

Species that rely on our dwindling forests have already declined by around [53 percent since 1970](#), and more [forests around the world](#) are showing signs of increasing stress.

This doesn't just impact the other life trees interact with either.

Trees are interwoven with Earth's soil, atmosphere, and weather, too – cleaning our air, producing oxygen, and [making it rain](#). They store three-quarters of the world's accessible freshwater and [more than half its problematic carbon dioxide](#).

Lose enough trees and our planet's cycling of carbon, water and nutrients will be thrown into disarray.

"We're showing that diverse forests store more carbon than monocultures," Rivers [told The Guardian](#).

"That's true for many ecological functions, not just carbon capture, but providing habitat to animals, soil stabilization, resilience to pests and diseases, resilience to storms and adverse weather. By losing tree diversity, we'll also lose diversity in all organisms: birds, animals, fungi, microorganisms, insects."

A few tree species are getting lucky and are able to take advantage of the rapid environmental changes we've caused, like those [creeping into territory that fires have cleared](#). But many more are being obliterated [by the same processes](#).



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Much needs to be done to combat this at a collective level, but we all can play a part by recognizing the importance of trees and fighting our own [plant blindness](#). Earlier this year, researchers pointed out that [fewer people than ever](#) are taking up botanical education in the UK at a time when [we need plants](#) more than ever.

We must all think of the trees.

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Richard P. Vlosky, Ph.D.
*Crosby Land & Resources Endowed Professor of Forest Sector Business Development
Director, Louisiana Forest Products Development Center
Room 227, School of Renewable Natural Resources
Louisiana State University, Baton Rouge, LA 70803
Phone (office): (225) 578-4527; Mobile Phone: (225) 223-1931
rvlosky@agcenter.lsu.edu*

Chair, Agricultural Faculty Council, LSU AgCenter/College of Agriculture

Scientific Board Member (<https://www.forest-journal.com/>)

