AN OLD TREE DOESN'T GET TALLER, BUT BULKS UP LIKE A BODYBUILDER

By Richard Harris

The world's biggest trees, such as the large Scots pine in Spain's Sierra de Baza range, are also the world's fastest-growing trees, according to an analysis of 403 tree species spanning six continents.

Like other animals and many living things, we humans grow when we're young and then stop growing once we mature. But trees, it turns out, are an exception to this general rule. In fact, scientists have discovered that trees grow faster the older they get.

Once trees reach a certain height, they do stop getting taller. So many foresters figured that tree growth — and girth — also slowed with age.

"What we found was the exact opposite," says Nate Stephenson, a forest ecologist with the U.S. Geological Survey, based in California's Sequoia and Kings Canyon national parks. "Tree growth rate increases continuously as trees get bigger and bigger," Stephenson says.

The General Sherman, a giant sequoia in California's Sequoia National Park, is more than 2,000 years old, and is thought to be the largest tree (by volume) in the world.

There have been hints before that mature trees grow faster than they age, but the idea had been controversial, he says. So he got together with 37 scientists from 16 nations to answer the question on a global scale.

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They examined nearly 700,000 trees that have been the subject of long-term studies. Their conclusion, published in the *Journal Of Nature:* While trees did stop getting taller, they continued to get wider — packing on more and more mass the older they got. And we're not talking about the tree-equivalent of an aging crowd with beer guts — old trees are more like active, healthy bodybuilders.

"It's as if, on your favorite sports team, you find out the star players are a bunch of 90-year-olds," Stephenson says. "They're the most active. They're the ones scoring the most points. That's an important thing to know."

Because, in the world of trees, that means the oldest members of the forest are doing the most to pull carbon dioxide out of the air and to store it as carbon in their wood. Stephenson says that's another argument for preserving old-growth forests.

"Not only do they hold a lot of carbon, but they're adding carbon at a tremendous rate," Stephenson says. "And that's going to be really important to understand when we're trying to predict how the forests are going to change in the future — in the face of a changing climate or other environmental changes."

Some ecologists have argued that young forests are more important than old forests for combating climate change, because the thousands of small trees that replace the few big ones do, collectively, pull more carbon dioxide out of the air than the mature forest does. But Stephenson says that doesn't give full credit to the importance of old trees.

And the results have implications that go beyond conservation strategies. The findings challenge an assumption that has seemingly applied to all of biology.

"We didn't think that things could have unlimited growth potential," says Nathan Phillips at Boston University. "There's been a long history of that kind of thinking."

But the new study shows that when it comes to growth in trees — well, the sky's the limit. And this leaves Phillips wondering whether trees might, in fact, have the potential to live forever. He tries to imagine how long a tree would live if you could prevent it from being blown down or succumbing to drought or disease.

"How long could it go? I think it could go for a long, long time — basically indefinitely," he says.

Phillips has seen 500-year-old Douglas fir trees that are still producing scads of cones, which means they're still reproducing. So when it comes to aging, trees have something very special going on.