

# Ancient oak trees help reduce global warming

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The battle to reduce carbon emissions is at the heart of many eco-friendly efforts, and researchers from the University of Missouri have discovered that nature has been lending a hand. Researchers at the Missouri Tree Ring Laboratory in the Department of Forestry discovered that trees submerged in freshwater aquatic systems store carbon for thousands of years, a significantly longer period of time than trees that fall in a forest, thus keeping carbon out of the atmosphere.

"If a tree is submerged in water, its carbon will be stored for an average of 2,000 years," said Richard Guyette, director of the MU Tree Ring Lab and research associate professor of forestry in the School of Natural Resources in the College of Agriculture, Food and Natural Resources. "If a tree falls in a forest, that number is reduced to an average of 20 years, and in firewood, the carbon is only stored for one year."

The team studied trees in northern Missouri, a geographically unique area with a high level of riparian forests (forests that have natural water flowing through them). They discovered submerged oak trees that were as old as 14,000 years, potentially some of the oldest discovered in the world. This carbon storage process is not just ancient; it continues even today as additional trees become submerged, according to Guyette.

While a tree is alive, it has a high ability to store carbon, thus keeping it out of the atmosphere. However, as it begins to decay, a tree's carbon is released back into the atmosphere. Discovering that certain conditions slow this process reveals the importance of proper tree disposal as well as the benefits of riparian forests.

"Carbon plays a huge role in climate change and information about where it goes will be very important someday soon," said Michael C. Stambaugh, research associate in the MU Department of Forestry. "The goal is to increase our knowledge of the carbon cycle, particularly its exchange between the biosphere (plants) and atmosphere. We need to know where it goes and for how long in order to know how to offset its effects."

This could be a valuable find for landowners. Although it is not yet common in North America, emissions trading has been gaining popularity in parts of Europe. Also known as cap and trade, emissions trading works to reduce pollution by setting a limit on the amount of pollutants an organization can emit into the air. If they exceed that number, the group is required to obtain carbon credits. One carbon credit equals one metric ton of carbon-dioxide or other equivalent greenhouse gases.

Carbon credits can be purchased in a variety of ways. Such as: planting new trees or harvesting old wood that has stored carbon; collecting methane from landfills; or purchasing credits from other companies who have a carbon surplus by staying below their emission requirements.

This week, the California Air Resources Board announced the consideration of a large plan to fight global warming. The recommendations include reducing emissions, in part by requiring major polluters to trade carbon credits.

"Farmers can sell the carbon they have stored in their trees through a carbon credit stock market," Guyette said. "Companies that emit excess of carbon would be able to buy carbon credits to offset their pollution."

Source: University of Missouri-Columbia

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