

The Carbon Cycle

FORESTRY NEVER LOOKED SO COOL

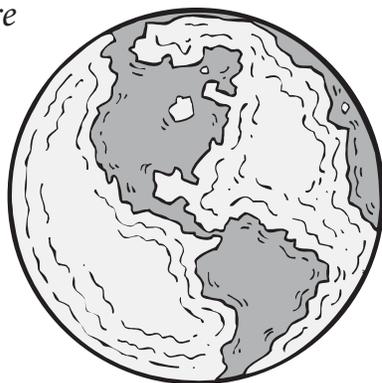


The concepts in *The Carbon Cycle: Forestry Never Looked So Cool* graphic are well summarized in the following excerpt by Patrick Moore, Ph.D. in the Winter 2006 edition of *California Forests*.

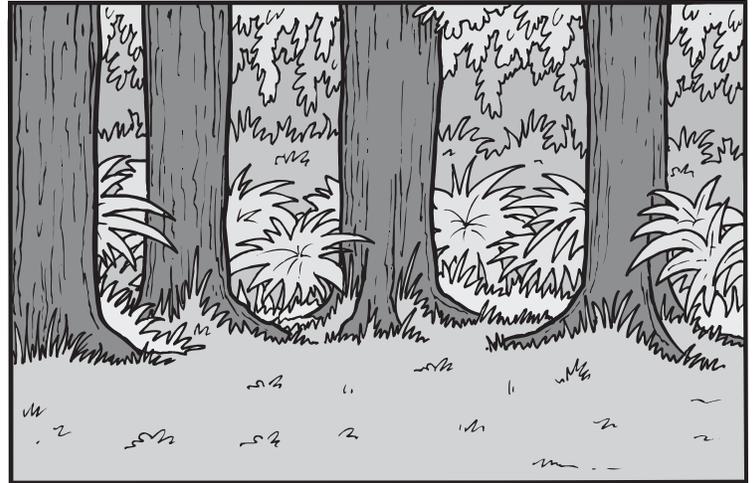
Trees are the most powerful concentrators of carbon on Earth. Through photosynthesis, they absorb CO₂ from the atmosphere and store it in their wood, which is nearly 50 percent carbon by weight. The relationship between trees and greenhouse gases is simple enough on the surface. Trees grow by taking carbon dioxide from the atmosphere and, through photosynthesis, converting it into sugars. The sugars are then used as energy and material to build the cellulose and lignin that are the main constituents of wood. When a tree rots or burns the carbon contained in the wood is released back to the atmosphere. Active forest management, such as thinning, removing dead trees, and clearing debris from the forest floor is very effective in reducing the number and intensity of forest fires. And the wood that is removed can be put to good use for lumber, paper and energy.

The impact of forests on the global carbon cycle can be boiled down to these key points:

- On the negative side, the most important factor influencing the carbon cycle is deforestation which results in a permanent loss of forest cover and a large release of CO₂ into the atmosphere. Deforestation—which occurs primarily in tropical countries where forests are permanently cleared and converted to agriculture and urban settlement—is responsible for about 20 percent of global CO₂ emissions.



- On the positive side, planting fast-growing trees is the best way to absorb CO₂ from the atmosphere. Many countries with temperate forest have seen an increase in carbon stored in trees in recent years. This includes New Zealand, the United States, Sweden and Canada. Plus, using wood sustainably reduces the need for non-renewable fossil fuels and materials such as steel and concrete – the very causes of CO₂ emissions in the first place.



The good news is that forests in the United States are net carbon sinks, since annual growth exceeds annual harvest. We are currently experiencing an increase in forested land as forests are being re-established on land previously used for agriculture. Catastrophic wildfires are uncommon in managed forests, whereas millions of acres of unmanaged forests burn every year due to excessive build-up of dead trees and woody debris.

Every wood substitute, including steel, plastic and cement, requires far more energy to produce than lumber. More energy usually translates into more greenhouse gases in the form of fossil fuel consumption or cement production.

One of the best ways to address climate change is to use more wood, not less. Wood is simply the most abundant, biodegradable and renewable material on the planet.