

April 2, 2004

The Forests are Breathing: The Global Carbon Cycle
Background to the Climate Stewardship Act, HR 4067

Dear Colleague:

We urge you to cosponsor the Climate Stewardship Act, introduced on March 30. It provides a framework for the reduction of greenhouse gas emissions from the burning of fossil fuels and would allow the forestry and agricultural industries to benefit from the ability of these land uses to absorb carbon dioxide (CO₂).

Why carbon dioxide?

All organic material contains carbon, released as CO₂ during combustion. Carbon dioxide is the primary gas known to trap the sun's heat in the atmosphere and to warm the earth's surface temperature. The concentration of CO₂ in the atmosphere has already increased by about 30% since the middle of the 19th century. Understanding carbon's natural cycle is an important precursor to understanding how to manage the human contribution to atmospheric carbon.

How does the carbon cycle work?

The movement of carbon, in its many forms, between the biosphere, atmosphere, oceans, and geosphere is known as the carbon cycle. Forests and other plants play an important role in the natural carbon cycle, in which there is a fixed amount of carbon. Plants absorb CO₂ from the atmosphere during photosynthesis and release CO₂ back in to the atmosphere during respiration and decay. Another major exchange of CO₂ occurs between the oceans and the atmosphere. Carbon readily dissolves in water and is used by marine algae and plants in photosynthesis. Carbon is also released from the ocean to the air from ocean soils and decaying organic material.

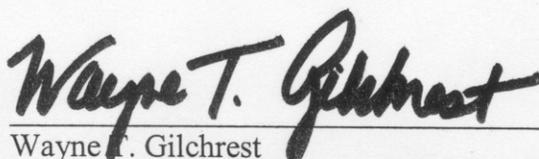
Much of the carbon stored in trees and soils is released to the atmosphere when forests are cleared and the land is cultivated. Some of the release occurs rapidly with burning; some of it occurs slowly as dead plant material decomposes. When forests regrow on cleared land, they withdraw carbon from the atmosphere and store it again in trees and soils.

The difference between the total amount of carbon released to the atmosphere and the total amount withdrawn from the atmosphere determines whether the land is a net source or sink for atmospheric carbon. Major carbon sinks, or stores of carbon dioxide, include living and dead organisms found in the biosphere, carbon dioxide in the atmosphere, organic matter in soils, in sedimentary rocks and fossil fuels, and in the oceans.

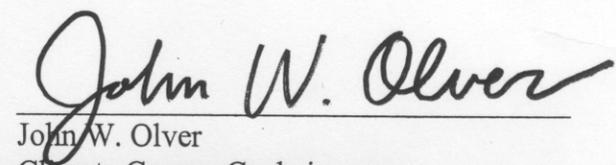
The February 2004 issue of *National Geographic Magazine* includes an article about current scientific understanding about the carbon cycle and the role of forests entitled "It's There on the Monitor: The Forest is Breathing." A synopsis of the article can be found at:
<http://magma.nationalgeographic.com/ngm/0402/feature5/index.html>.

For more information on the Climate Stewardship Act, contact Edith Thompson (Rep. Gilchrest) at x55311 or Abbie Meador (Rep. Olver) at x55335.

Sincerely,


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