

Clearcutting and Climate Change

Clearcutting California's forests is reducing carbon sequestration

Clearcutting produces more CO₂ emissions than other logging methods

Clearcutting is exacerbating the forest effects of climate change

“According to the California Energy Commission, California lost 30% of its sequestration capacity in the last decade alone. It is clear, therefore, that forests may be sources of carbon dioxide or sinks of carbon dioxide, *depending upon how people decide to manage them.*” Laurie Wayburn, President, Pacific Forest Trust, Presentation to the California Climate Action Registry's Conference May 6, 2003.

- **Widespread clearcutting of California forests is causing large scale depletion of California's carbon stores**
- **Clearcutting in California's forests emits more CO₂ emissions than responsible harvesting methods such as selection logging; these emissions may exceed carbon storage in plantations for at least twenty years after harvest**
- **Older trees store more CO₂ annually than do younger trees in clearcutting plantations**
- **Only about one third of the carbon removed in clearcut logging is “sequestered” in lumber products, and many forest products have limited life spans**
- **Clearcutting exacerbates the three most likely effects of climate change on state forests: lessened snowpack and early run-off, an increase in the number and severity of wildfires, and an increase in forest infestations**
- **A State of California climate change study¹ anticipates decreased timber yields under climate change conditions, with pine plantations suffering the greatest declines**
- **This State-sponsored study concluded that diverse multi-aged forests will fare better under climate change impacts than even-aged tree plantations**

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What do experts say about the relationship between climate change clearcuts and plantations?

¹ California Energy Commission. *Climate Change Impact on Forest Resources White Paper*. March 2006.
<http://www.energy.ca.gov/2005publications/CEC-500-2005-193/CEC-500-2005-193-SF.PDF>

“Large amounts of carbon could be released into the atmosphere during transitions from one forest type to another because the rate at which carbon can be lost during times of high forest mortality is greater than the rate at which it can be gained through growth to maturity.”

IPCC Working Group II. “Summary for Policymakers: Scientific-Technical Analyses of Impacts, Adaptations and Mitigation of Climate Change.” <http://www.ipcc.ch/pub/sarsum2.htm>

“Some definitions of reforestation include the activity of regeneration after disturbance or harvesting, while disturbance or harvesting are not defined as deforestation. In these circumstances credits could be accounted for the regeneration, without debits for disturbance or harvesting, this would lead to an accounting system where the changes in terrestrial carbon do not reflect the real changes in the atmosphere.”

Robert T. Watson, Chair of the IPCC. “A Report on the Key Findings from the IPCC Special Report on Land-Use, Land-Use Change and Forestry.” 12th Session of SBSTA, Bonn, Germany. June 13, 2000. <http://www.ipcc.ch/press/sp-lulucf.htm>

“There is a widespread and misguided belief that logging or clearing mature forests and replacing them with fast-growing younger trees will benefit the climate by sequestering atmospheric CO₂. While younger trees grow and sequester carbon quickly, the fate of stored carbon when mature forests are logged must also be considered. When a forest is logged, some of its carbon may be stored for years or decades in wood products. But large quantities of CO₂ are also released to the atmosphere - immediately through the disturbance of forest soils, and over time through the decomposition of leaves, branches, and other detritus of timber production. One study found that even when storage of carbon in timber products is considered, the conversion of 5 million hectares of mature forest to plantations in the Pacific Northwest over the last 100 years resulted in a net increase of over 1.5 billion tons of carbon to the atmosphere.”

Union of Concerned Scientists. “Recognizing Forests' Role in Climate Change” http://www.ucsusa.org/global_warming/solutions/recognizing-forests-role-in-climate-change.html

“Fluxes of CO₂, water vapor, and sensible heat were measured by the eddy covariance method above a young ponderosa pine plantation in the Sierra Nevada Mountains (CA) over two growing seasons.... We conclude that the net C[arbon] balance of Mediterranean-climate pine ecosystems is sensitive to extreme events under low soil moisture conditions and could be altered by slight changes in the climate or hydrologic regime.”

A.H. Goldstein, N.E. Hultman, J.M. Fracheboud et al. “Effects of climate variability on the carbon dioxide, water, and sensible heat fluxes above a ponderosa pine plantation in the Sierra Nevada (CA).” <http://nature.berkeley.edu/~ahg/pubs/Effects.pdf>

“Research by CarboEurope, a European program that has pioneered research into the carbon budget, reveals that soils in forests release more carbon than their trees will absorb in the first 10 years. Forest soils and the organic matter within them generally contain three to four times as much carbon as does vegetation on the ground. CarboEurope’s researchers contend that, when ground is cleared for forest planting, rotting organic matter in the soil releases a surge of carbon dioxide into the air that will exceed the amount of carbon dioxide absorbed by growing trees for at least the first 10 years of forest growth; only later will the uptake of carbon by the trees begin to offset the release of carbon dioxide from the soil.”

Energy Information Administration: “Emissions of Greenhouse Gases in the United States 2003: Land Use Issues.” <http://www.eia.doe.gov/oiaf/1605/gg04rpt/land.html>

Timber harvest, clear cutting in particular, removes more carbon from the forest than any other disturbance (including fire). The result is that harvesting forests generally reduces carbon stores and results in a net release of carbon to the atmosphere.”

Mark Harmon, PhD. Professor and Richardson Chair in Forest Science, Oregon State University College of Forestry. Comment letter to the California Air Resources Board. October 2007. http://www.arb.ca.gov/lispub/comm/bccomdisp.php?listname=forestghg07&comment_num=22&virt_num=22