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Slash and Sprawl: U.S. Eastern Forests Resume Decline Since the 1970s woodlands that had been rebounding started to shrink again

By David Biello

Trees once covered almost the entire eastern seaboard of the U.S. Vast forests supported a rich ecosystem, including flocks of the extinct passenger pigeon big enough to blot out the sun. But by the 1920s at least half of this forest was gone—a victim of tree-clearing for farming, forestry or fossil-fuel extraction.

Then, the forest rebounded for several decades as once-farmed fields were left fallow. But a new study reveals that since the 1970s eastern forests have begun to diminish again; roughly 3.7 million hectares of forested land—an area larger than the state of Maryland—have been transformed into subdivisions, tree plantations and lunar-esque landscapes resulting from mountaintop removal mining. In fact, the latter activity alone eliminated 420,000 hectares of woodlands in the past two decades.



"Human land use is a primary driver of environmental change," says geographer Mark Drummond of the U.S. Geological Survey (USGS), who collaborated on the study in the April issue of *BioScience* with USGS Earth observation scientist Thomas Loveland. "The cumulative footprint of human activities on the land surface is causing a significant net decline in forest cover."

Suburban sprawl was the leading cause of the forest's recent retreat in much of the east. The megalopolis that stretches from Boston to Washington, D.C., has grown in extent by 90 percent since 1970, resulting in the cutting of 1.9 million hectares of trees. The southern coastal plain, northeastern highland and the Piedmont—the hilly region between the coastal plains and the Appalachian Mountains stretching from New Jersey into Georgia and Alabama—lost the most forest cover.

That's bad news for the wildlife that had rebounded along with the woods. It also means that the newly lost trees are not incorporating more carbon dioxide—the most common greenhouse gas changing the climate. Since the early 20th century U.S. forests had been soaking up extra CO₂, and this timberland was expected to play a role as an "offset" for greenhouse gas emissions from other sources (like the coal-fired power plants burning through the products of mountaintop removal mining) in any legislation to combat climate change, such as the bill currently being written in the U.S. Senate. "Over the past 30 years, the strength of the carbon sink may have decreased by as much as two thirds in some eco-regions of the east," the USGS researchers wrote.

"We need to improve our understanding of how the U.S. landscape is changing as a result of human activities," Drummond says. "The amount of decline in carbon sequestration is still being examined."

The USGS scientists used Landsat satellite data since 1972, combined with field visits, to more precisely estimate forest cover in the 162 million hectares of the eastern U.S. Previous efforts from the Food and Agriculture Organization of the United Nations (FAO) and U.S. Department of Agriculture had found that forested areas in the eastern U.S. were still expanding overall, if only marginally, based on estimates.

Nor is this trend confined to the eastern U.S. Whereas FAO figures note that deforestation may be slowing globally—from 16 million hectares a year in the 1990s to 13 million hectares per year in the 2000s—that trend may have stopped or reversed in the developed world. "The recent declines in eastern forest cover that we are

seeing may herald similar trends elsewhere, in other regions or nations," Drummond says. "We see net forest declines in the west and areas of the south-central U.S. caused by land-use change."

Name/Period/Date

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1. Why were eastern forests cleared?
2. When did forest coverage rebound?
3. Why did the trend reverse?
4. What is a "megalopolis"?
5. Describe the effect of forest clearing on wildlife.
6. How did USGS scientists differ from FAO and USDA studies?