



MORE THAN PLANTING TREES: A PROFOREST APPROACH TO ADDRESSING CLIMATE CHANGE

Stand4Forests Report Series



OUR FORESTS. OUR STRENGTH.

Recently, initiatives to plant trees as a way to offset climate change have gained steam in the public sphere.

Although planting trees can be helpful in urban settings, large scale plantings must be done with the intent to restore complex native ecosystems in perpetuity. Focusing heavily on planting trees can take the world further away from more impactful climate change mitigation strategies, like preserving natural forests and eliminating fossil fuels. A proforestation approach, which emphasizes allowing forests to grow to ecological maturity, is a more holistic and lower cost solution for the complex problem of climate change.

Here's the truth of the matter:

- Planting trees is a small part of natural climate solutions, but preserving natural forests and promoting intact areas is an economically affordable climate solution with substantial carbon payoff.
- Forests open to logging offer no true long-term carbon storage solution.
- Planting trees instead of allowing natural regeneration leads to suboptimal carbon storage, wildlife habitat, water availability, fire risk, and other measures of forest health.

THE BOTTOM LINE: We need new policies designed to scale back forest disturbance from logging and leave more forests standing.

MYTH: Planting trees is the solution to climate change.

TRUTH: Protecting natural forests will yield bigger and faster climate benefits than simply planting more trees.

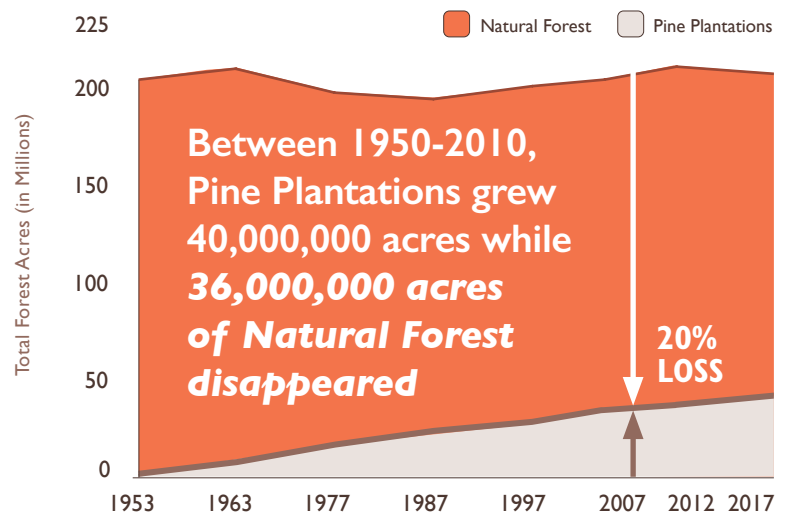
Forest acreage has grown less than 2% in the last 64 years, and acres of “forest” in the US South are increasingly likely to be pine plantations, not natural forests.^{1,2} The forest products industry celebrates this growth as a “victory”, because they value profits and standing tree farms above all else. If those forests had grown at the same rate that they had grown between 1953-1964, the first recording period, there would be 25 million more acres of forests in the US South than there are currently. Instead, forest growth in the US South is hampered by overzealous logging and industrial pressures.

TRUTH: Forest health is declining in the US South, and logging is to blame.

“Natural climate solutions” (NCS) have the potential to provide only a third of the total carbon emissions reductions needed, but reforestation and afforestation are only a small portion of those activities.² Exclusively focusing on reforestation and afforestation comes at the cost of reducing biodiversity, community resilience, native plant communities, and long term carbon storage.³

NCS predictions have not previously included proforestation approaches.¹ Proforestation activities, like a reduction in logging, avoided conversion to plantations or other land uses, forest preservation, and better management in wetlands and agricultural lands, are cheaper to implement, and absolutely needed to achieve the full benefit of NCS.^{4,5} These preservation activities are low-cost and essential to mitigating current threats to natural forests. For example, addressing the issue of urban sprawl by preserving mature forests on the boundary of an urban area will keep the carbon already stored on the landscape safe; in contrast, planting trees will take decades to reap substantial carbon benefits.

LOSS OF NATURAL FORESTS IN THE US SOUTH



TRUTH: Mature forests store significantly more carbon than younger trees.

Contrary to popular belief, older forests do not store less carbon than younger forests. Every year that a tree grows, it absorbs more carbon. In fact, older forests have already stored more carbon than younger forests, and will continue to provide substantial carbon and climate benefits for decades to come.^{6,7}

Converting older forests to younger forests through harvest will not improve the rate of carbon sequestration by forests.⁸ After harvest, simulations show that it can take 200 years before a forest stand is able to return to the storage capacity that it once had.⁸ In the US South, where over half of forest stands are less than forty years old, allowing forests to grow to true maturity could provide substantial carbon benefits.⁹



NATURAL FOREST



PINE FOREST

MYTH: Planting trees is functionally “the same” as naturally regenerated forests

TRUTH: Naturally regenerated forests provide many more benefits than plantations in ecosystem services like wildlife habitat, water quality, and carbon storage.

Although plantations do provide some measure of ecosystem services when compared to non-forested land,⁷ the benefits are substantially less than natural forests. Plantations provide a fraction of the value in ecosystem services like flood control and wildlife habitat, and fail to provide a biodiverse understory to support rare and endemic species.^{10,11} Plantations are also less resilient to extreme events like drought when compared to biodiverse natural forests.^{12,13} One report estimates that plantations are worth fifteen times less than the natural wetland and riparian forests that they have replaced in the US South.¹⁴

**NATURAL FORESTS STORE
50% MORE CARBON
THAN PLANTED FORESTS**

TRUTH: Plantations store significantly less carbon than natural forests do, and the risk of carbon loss from harvest is much higher.

The ability of plantations to store carbon is also substantially hampered when compared to natural forests. Study after study shows that natural forests store significantly more carbon than planted forests, sometimes more than 50%.¹⁵⁻¹⁷

The average rotation length for a plantation, the time between when seedlings are planted and when the trees are cut down, is just thirty years. Although there is carbon stored during those thirty years,

the vast majority of the carbon ends up in the atmosphere post-harvest¹⁵. After just one hundred years, over eighty-five percent of forest carbon from a harvest is already in the atmosphere.¹⁸ With the impetus being on *keeping* carbon out of the atmosphere, promoting solutions that involve wood products is simply irresponsible.

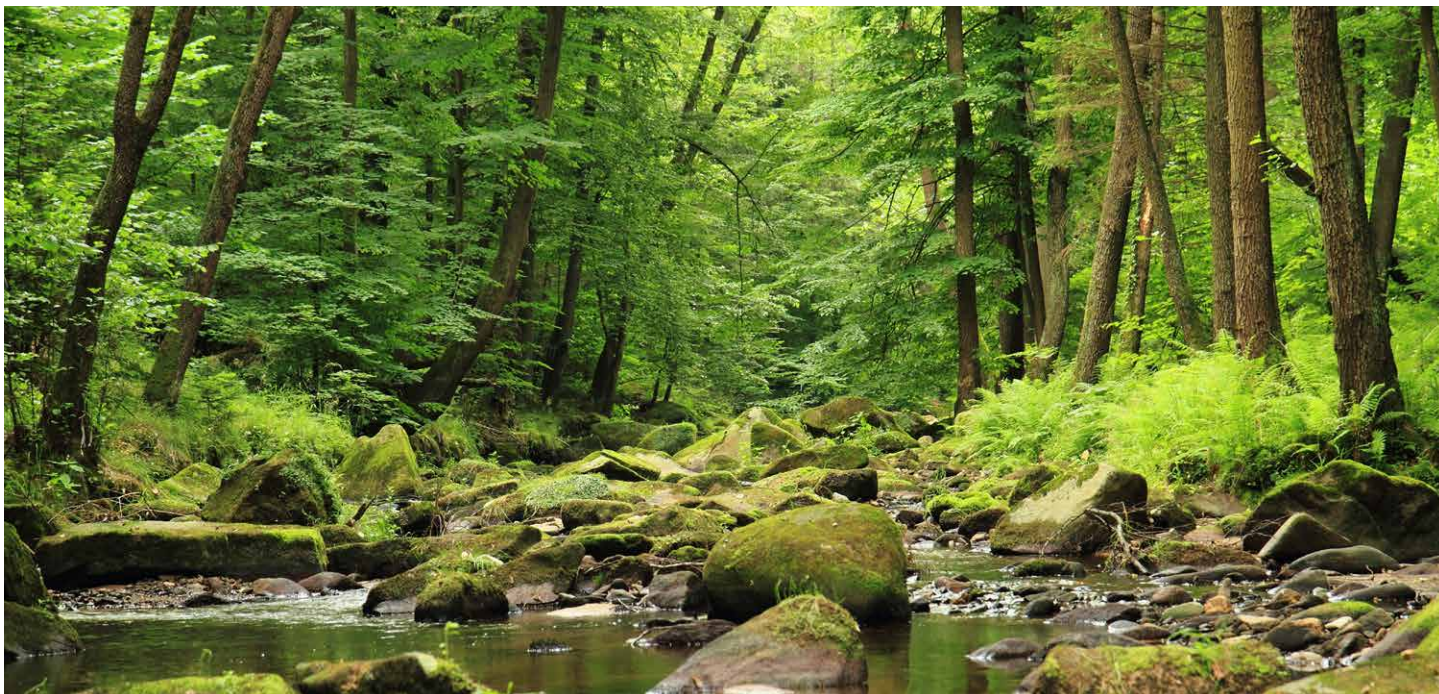
TRUTH: Plantations may cause issues with water supply, fire risk, facilitate invasive species invasions, and even cause genetic drift of nearby native species.

A third of the world's land is moderately or highly degraded and in urgent need of restoration.¹⁹ However, restoration and afforestation projects must be planned carefully because of their unintended impacts on the surrounding ecosystems. Large scale plantings often use fast-growing species that require large amounts of water. China's large scale planting efforts have resulted in reduced freshwater quality and increasing water security issues in the region.²⁰ A long-term study in the Pacific Northwest found that summer water flows in plantation forests were half that of those in natural forests.²¹ In some cases, plantations can even increase the risk of large scale wildfires, including here in the United States.^{22,23}

Beyond water issues, scientists are exploring the possible impacts of plantations on both invasive species management and genetic diversity management. For example, it is unclear how substantial deployment of planted forests would affect nearby genetic diversity of naturally regenerated members of the same species.²⁴ Additionally, maintaining high genetic diversity within plantations seems to be key to mitigating risk from natural fluctuations in climate and extreme weather events.²⁵ Finally, in some places, non-native species are used as plantation species, which can escape and begin encroaching on native ecosystems.^{26,27}

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