



WE NEED TO DO MORE THAN PLANT SOME TREES



OUR FORESTS. OUR STRENGTH.

Recently, there have been talks about planting trees as a way to offset climate change.

Planting trees may help cities stay cool, but won't be good in other places. Instead, we must do more to restore natural forests. Natural forests have the ability to clean water, purify air, and provide homes for wildlife.

When we focus on planting trees, we don't think about other actions to prevent climate change. To prevent climate change, we can protect more natural forests and get rid of fossil fuels. We believe that the concept of proforestation, allowing natural forests to grow older, is a better and lower cost answer for the complex problem of climate change.

Here's the truth:

- Planting trees is just one small step to prevent climate change.
- Protecting natural forests and roadless areas is an affordable climate solution.
- Logging forests makes climate change worse.
- Nature knows best. Natural forests are much better at providing homes for wildlife, cleaning water and air, and reducing the risk of wildfire.

THE BOTTOM LINE: We need new policies designed to reduce logging and leave more forests standing.

MYTH: Planting trees is the only solution to climate change.

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

"Natural climate solutions" can only prevent about a third of climate change impacts, and planting trees is just one small part of the puzzle. It is much more important to protect and improve natural lands.² If we focus only on planting trees, we lose out on other benefits. By protecting forests, we can improve homes for wildlife, reduce damages from big storms, and remove as many greenhouse gases from the atmosphere as we can.³

Instead, we have a bigger impact by focusing on proforestation, which includes reducing logging, forest protection, and better land management activities.¹ Proforestation is cheaper than planting trees, and more important for preventing the worst impacts of climate change.^{4,5}

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

Trees are so valuable in the fight against climate change because they remove carbon dioxide from the atmosphere. Carbon dioxide is one of many harmful greenhouse gases that contribute to climate change.

The wood products industry commonly says that young trees "store more carbon" than older trees, but this is a myth. 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 store carbon for decades to come.^{6,7}

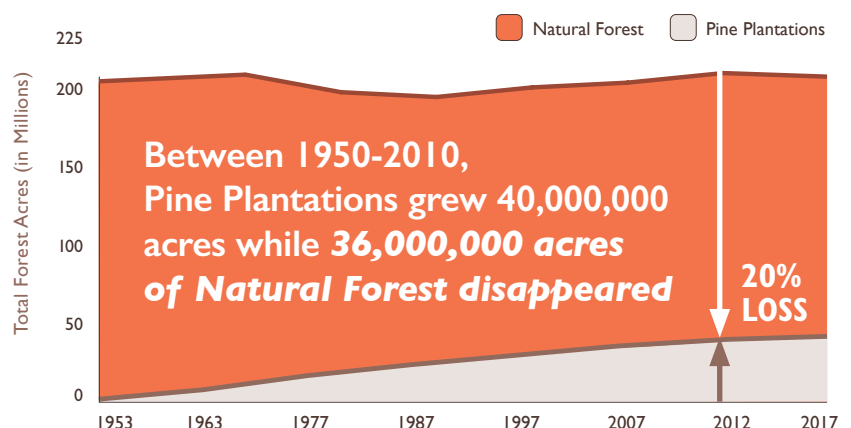
Therefore, cutting down old forests and replanting them will cause more climate change to occur.⁸ In fact, some simulations show that it can take 200 years before a forest is able to return to the carbon storage it had before being logged.⁸ In the US South, where over half of forests are less than forty years old, allowing forests to grow to true maturity could provide large carbon benefits.⁹

MYTH: Planting trees is "the same" as natural forests

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

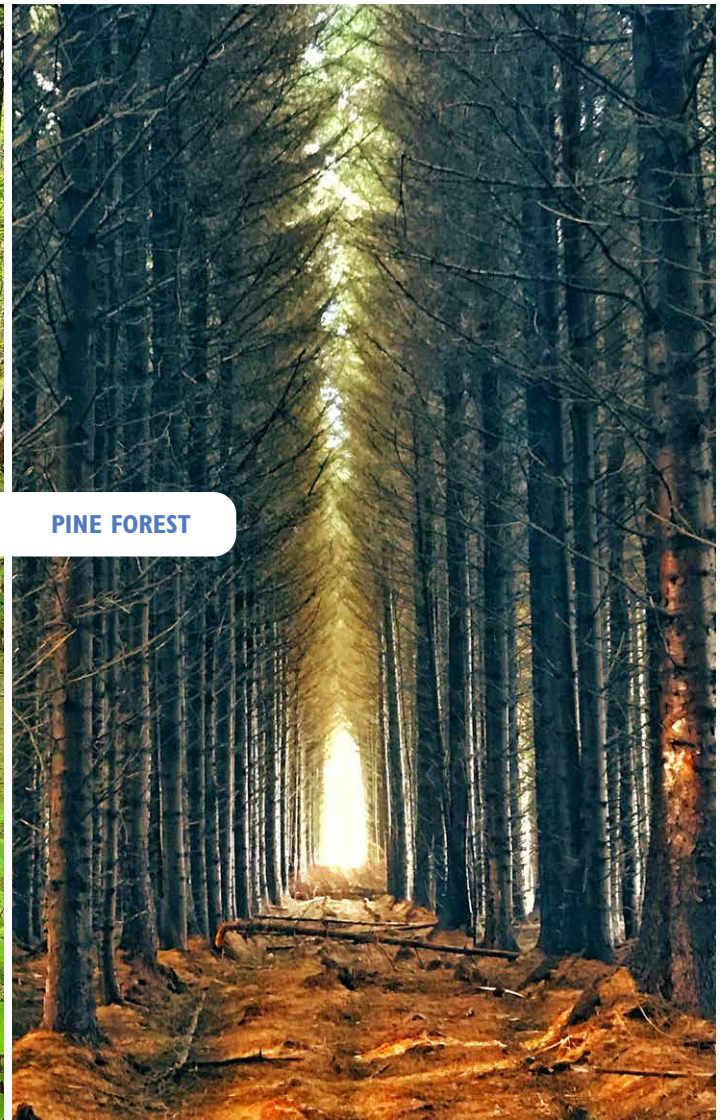
Large plots of planted trees, usually being grown to be logged, are called plantations. Plantations are very low quality forests, especially when compared to natural forests.⁷ These fake forests provide just a fraction of the value that natural forests do. Natural forests provide more homes for wildlife, cleaner air and water, and more protection from flooding.¹⁰⁻¹² In contrast, fake forests are more likely to die from drought than natural forests.^{13,14}

LOSS OF NATURAL FORESTS IN THE US SOUTH





NATURAL FOREST



PINE FOREST

NATURAL FORESTS STORE 50% MORE CARBON THAN PLANTED FORESTS

TRUTH: Fake forests store significantly less carbon than natural forests do.

Did you know that many studies show that natural forests store more carbon than fake forests?¹⁵⁻¹⁷ When natural forests store more carbon, that means that they're doing more to stop harmful climate change than plantations are.

Plantations store less carbon because they get cut down so frequently.¹⁵ Whenever you log a forest, most of its carbon ends up in the atmosphere soon after. After 100 years, over eighty five percent of carbon from a harvest is in the atmosphere.¹⁸ To stop climate change, we need to keep carbon out of the atmosphere. This means that we must reduce the amount of logging going on in natural or planted forests.

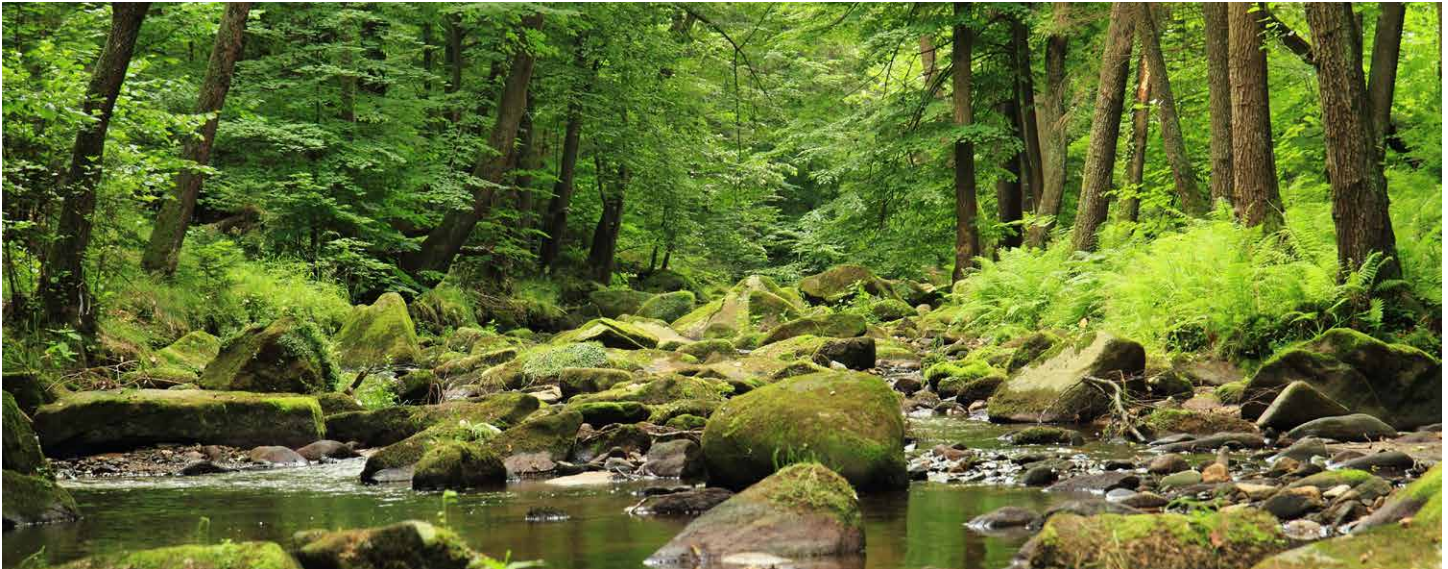
TRUTH: Fake forests cause issues with water supply, risk of wildlife, and more.

According to the UN, a third of the world's land is degraded and in need of help.¹⁹ However, restoration projects must be planned carefully because of their unintended impacts. Large plantations use fast-growing trees that require large amounts of water. China's large fake forests have lowered both water quality and security in the region.²⁰ Another study found that fake forests decrease how much water is available by about half.²¹ In some cases, plantations can even increase the risk of large scale wildfires, especially here in the United States.^{22,23}

Beyond water and fire, scientists are also discovering that fake forests can impact genetics of natural forests, and the frequency of forest pests. For example, if you plant clones of one tree species in a large area, they may interbreed with natural forests nearby.^{24,25} Finally, in some places, non-native species are used as plantation species, which can escape and hurt native forests.^{26,27} Or, pests that travel on the plantation trees can escape and hurt native forests.

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REFERENCES

- Moomaw WVR, Masino SA, Faison EK. Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good. *Frontiers in Forests and Global Change*. 2019;2: 27. doi:10.3389/ffgc.2019.00027
- Griscom BV, Adams J, Ellis PW, Houghton RA, Lomax G, Miteva DA, et al. Natural climate solutions. *Proc Natl Acad Sci U S A*. 2017;114: 11645–11650. doi:10.1073/pnas.1710465114
- Seddon N, Turner B, Berry P, Chausson A, Girardin CAJ. Grounding nature-based climate solutions in sound biodiversity science. *Nat Clim Chang*. 2019;9:84–87. doi:10.1038/s41558-019-0405-0
- Fargione JE, Bassett S, Boucher T, Bridgman SD, Conant RT, Cook-Patton SC, et al. Natural climate solutions for the United States. *Sci Adv*. 2018;4: eaat1869. doi:10.1126/sciadv.aat1869
- Maron M, Simmonds JS, Watson JEM. Bold nature retention targets are essential for the global environment agenda. *Nat Ecol Evol*. 2018;2: 1194–1195. doi:10.1038/s41559-018-0595-2
- Pugh TAM, Lindeskog M, Smith B, Poulter B, Arneeth A, Haverd V, et al. Role of forest regrowth in global carbon sink dynamics. *PNAS*. 2019;116: 4382–4387. Available: <https://www.pnas.org/content/116/10/4382.full>
- Baral H, Guariguata MR, Keenan RJ. A proposed framework for assessing ecosystem goods and services from planted forests. *Ecosystem Services*. 2016;22: 260–268. doi:10.1016/j.ecoser.2016.10.002
- Harmon ME, Ferrell WK, Franklin JF. Effects on carbon storage of conversion of old-growth forests to young forests. *Science*. 1990;247: 699–702. doi:10.1126/science.247.4943.699
- Oswalt SN, Smith WB, Miles PD, Pugh SA. Forest resources of the United States, 2017. Washington Office, Forest Service, US Department of Agriculture; 2019. Available: https://www.fs.fed.us/research/publications/gtr/gtr_wo97.pdf
- Watson JEM, Evans T, Venter O, Williams B, Tulloch A, Stewart C, et al. The exceptional value of intact forest ecosystems. *Nat Ecol Evol*. 2018;2: 599–610. doi:10.1038/s41559-018-0490-x
- Sakschewski B, von Bloh VV, Boit A, Poorter L, Peña-Claros M, Heinke J, et al. Resilience of Amazon forests emerges from plant trait diversity. *Nat Clim Chang*. 2016;6: 1032–1036. doi:10.1038/nclimate3109
- Davis SL. Treasures of The South: The True Value of Wetland Forests. Dogwood Alliance; 2018 Feb. Available: <https://www.dogwoodalliance.org/wp-content/uploads/2018/01/Treasures-of-the-South-Web-Report.pdf>
- Hutchison C, Gravel D, Guichard F, Potvin C. Author Correction: Effect of diversity on growth, mortality, and loss of resilience to extreme climate events in a tropical planted forest experiment. *Sci Rep*. 2019;9: 17712. doi:10.1038/s41598-019-53618-z
- Jactel H, Gritti ES, Drössler L, Forrester DI, Mason WL, Morin X, et al. Positive biodiversity-productivity relationships in forests: climate matters. *Biol Lett*. 2018;14. doi:10.1098/rsbl.2017.0747
- Keith H, Lindenmayer D, Mackey B, Blair D, Carter L, McBurney L, et al. Managing temperate forests for carbon storage: impacts of logging versus forest protection on carbon stocks. *Ecosphere*. 2014;5: art75. doi:10.1890/ES14-0005.1
- NC Forests: Carbon Per Acre Query. In: US Forest Service [Internet]. [cited 13 Mar 2020]. Available: <https://bit.ly/NC-Forest-Carbon>
- Hulvey KB, Hobbs RJ, Standish RJ, Lindenmayer DB, Lach L, Perring MP. Benefits of tree mixes in carbon plantings. *Nat Clim Chang*. 2013;3: 869–874. doi:10.1038/nclimate1862
- Ingerson A. Carbon storage potential of harvested wood: summary and policy implications. *Mitig Adapt Strateg Glob Change*. 2011;16: 307–323. doi:10.1007/s11027-010-9267-5
- Intergovernmental Technical Panel on Soils. Status of the World's Soil Resources. United Nations Food and Agriculture Organization; 2015. Available: <http://www.fao.org/documents/card/en/c/c6814873-efc3-41db-b7d3-2081a10ede50/>
- Schwärzel K, Zhang L, Montanarella L, Wang Y, Sun G. How afforestation affects the water cycle in drylands: A process-based comparative analysis. *Glob Chang Biol*. 2020;26: 944–959. doi:10.1111/gcb.14875
- Segura C, Bladon KD, Hatten JA, Jones JA, Hale VC, Ice GG. Long-term effects of forest harvesting on summer low flow deficits in the Coast Range of Oregon. *J Hydrol*. 2020;585: 124749. doi:10.1016/j.jhydrol.2020.124749
- Schlanger Z. The global demand for palm oil is driving the fires in Indonesia. Quartz. 18 Sep 2019. Available: <https://qz.com/1711172/the-global-demand-for-palm-oil-is-driving-the-fires-in-indonesia/>. Accessed 21 Apr 2020.
- Zald HSJ, Dunn CJ. Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape. *Ecol Appl*. 2018;28: 1068–1080. doi:10.1002/eap.1710
- Ingvarsson PK, Dahlberg H. The effects of clonal forestry on genetic diversity in wild and domesticated stands of forest trees. *Scand J For Res*. 2019;34: 370–379. doi:10.1080/02827581.2018.1469665
- Ivetić V, Devetaković J. Concerns and evidence on genetic diversity in planted forests. I. 2017; 196–207. doi:10.21750/REFOR.3.15.39
- Vítková M, Müllerová J, Sádlo J, Pergl J, Pyšek P. Black locust (*Robinia pseudoacacia*) beloved and despised: a story of an invasive tree in Central Europe. *For Ecol Manage*. 2017;384: 287–302. doi:10.1016/j.foreco.2016.10.057
- Dyderski MK, Jagodziński AM. Drivers of invasive tree and shrub natural regeneration in temperate forests. *Biol Invasions*. 2018;20: 2363–2379. doi:10.1007/s10530-018-1706-3



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ABOUT DOGWOOD ALLIANCE • Dogwood Alliance mobilizes diverse voices to protect Southern forests and communities from destructive industrial logging. For over 20 years, Dogwood Alliance has worked with diverse communities, partner organizations and decision-makers to protect Southern forests across 14 states. They do this through community and grassroots organizing, holding corporations and governments accountable and working to conserve millions of acres of Southern forests.