

THE TREES OF OUR LIVES

By Alice Loyd

It is appropriate to think about trees as we enter this particular holiday season. They hold an important symbolic place in religious and secular traditions, and now their role in nature is rising to prominence. “Of all the solutions to climate change, ones that involve trees make people the happiest,” writes Bill McKibben in a recent [article](#).

We know that loss of trees is part of the climate problem, but McKibben’s article is about the complexity of climate solutions, including tree conservation. For example, the European Union classifies wood as “renewable” energy equal to solar or wind power. Thus trees in North Carolina’s forests are being turned into wood pellets that burn up in the furnaces of European power plants, on the assumption that as these forests grow back, they will recapture carbon. Adam Collette of Dogwood Alliance responds, “that could take a century.” A tree must mature in order to become a significant carbon sink, and, further, when trees are cut down, roots left in the ground decompose and become a source of CO₂ release. Collette says, the soil will still be releasing carbon for years after the forest was cleared ([npr.org](#)).

Even the planting of more trees is not a simple solution. On the one hand we are encouraged to plant. A 2018 [report](#) by the Intergovernmental Panel on Climate Change (IPCC) says curbing global warming would require planting one billion hectares of additional forest. A July 2019 [study](#) by researchers in Switzerland, Italy, and France found the planet can accommodate a trillion more trees—all outside agricultural areas, cities, and existing forests. Some very ambitious tree-planting projects have been announced. In March 2019 the United Nations set a target to restore 350m hectares of forest—an area bigger than India—by 2030. India has pledged to plant 13m hectares by 2020, Latin America is aiming at 20m hectares, and African countries 100m hectares by 2030. China’s aspiration is to plant an area of forest as large as Ireland every year ([theguardian.com](#)). Ethiopia’s minister of innovation and technology announced 353,633,660 seedlings were planted in 12 hours on a day in July 2019 ([aljazeera.com](#)). A recent tree-planting campaign started by a YouTube personality set an ambitious goal: by January 1, 2020 raise \$20 million to plant 20 million trees ([nbcnews.com](#)).

On the other hand, we are cautioned to plant trees wisely. The authors of a 2019 IPCC [report](#) tell us that widespread use of land mitigation measures such as afforestation at the scale of several millions of km² globally could increase risks for desertification, land degradation, food security and sustainable development. The risks include reducing the food supply by pushing agricultural operations onto less-suitable land ([nytimes.com](#)). “Reforestation needs to be part of the solution if we’re going to succeed, but we need to understand that trees everywhere isn’t always a good thing,” said Peter W. Ellis, who co-authored a key 2017 [study](#) about the benefits of reforestation and other natural climate solutions ([nbcnews.com](#)).

Further, the locations we choose for planting should be appropriate for growing trees and the trees we plant should be suitable for these locations. “You want a tree that is going to survive in your climate with the minimum amount of maintenance,” said Peter Del Tredici, senior

research scientist emeritus at the Arnold Arboretum at Harvard University. Short-lived trees such as poplars would not serve as good climate sinks. To have a meaningful effect, Tredici said, a tree must live at least 10 to 20 years. “It takes that long for a tree to build up enough foliage so that it can have a substantial impact on the environment” ([nytimes.com](https://www.nytimes.com)). And if we plant trees, we need to water and otherwise protect them until they are well established. That means we either follow their progress ourselves or find reliable caregivers.

We also need to choose trees to fit a site that may be much warmer in the future than it is today. And people in snow-covered areas need to realize that adding trees can change how that land absorbs or reflects energy from the sun. At high latitudes, such as in parts of Canada and Siberia, snow-covered ground is more reflective than darker, tree-covered areas. “The concern is if you start planting trees where you have snow, you’re changing the color of the land surface and making it darker,” Poulter said. “Dark surfaces absorb more energy than lighter surfaces, so you’re actually going to warm the environment” ([nbcnews.com](https://www.nbcnews.com)). For this reason most large tree planting projects should take place in temperate and tropical regions.

Overall the studies show our first task is to protect the trees we already have. Most greenhouse gas emissions from land use come from deforestation. “I do think eliminating deforestation is more important than planting new forest,” says Stanford University professor Rob Jackson, who chairs the Earth System Science Department and Global Carbon Project and is an author of a forthcoming study on the ability of forests to store carbon as more CO₂ enters the atmosphere. But, he says, “It’s not an either-or, of course. We can do both” ([motherjones.com](https://www.motherjones.com)).

In some places reforestation has become urgent, and not just for the climate. One example is mangrove forests, one of the most threatened ecosystems in the world. Over the period from 1990-2000, mangroves were estimated to be disappearing at a rate twice as fast as rainforests, causing serious economic, social, and environmental impacts, especially for the poor, who use the mangrove forests for shade, fishing, firewood, building construction, and charcoal production. Mangroves serve as breeding grounds for fish, prawns, and crabs, and on a global scale, they absorb up to 50 times more carbon than any other type of ecosystem. They act as natural buffers against flooding by reducing the force of storm surges. Dense, healthy mangrove forests can decrease the height of waves by up to 66% ([rethink.earth](https://www.rethink.earth)).

Mangrove planting has become quite popular, but the Wetlands International website tells us the majority of planting efforts are failing. All shorelines are not suitable for growing mangroves, and as with other trees, the species must be matched to the conditions it will face ([wetlands.org](https://www.wetlands.org)). “There is a learning curve here,” says Arne Jens of that organization. “If you try to adopt or copy nature—planting the right front species—it will survive. But if you manipulate nature and choose the wrong (non-typhoon-resistant) species, then there is almost a 100% guarantee that when you have a strong typhoon, it will die.” Involving local communities, especially the women, also makes a planting project more likely to succeed long term ([rethink.earth](https://www.rethink.earth)).

Of course trees deserve more respect from us than to employ them as climate mitigation. In 2005 Duncan MacQueen of the International Institute for Environment and Development (IIED) wrote, “Trees also have ends of their own, a pattern of genetic coding geared to survival and reproduction. Trees and other living organisms therefore have moral status all of their own” (policy-powertools.org). Industrialized humans are only beginning to realize how little we’ve known about how trees function. In 1997, University of British Columbia forestry professor Suzanne Simard put in place the first pieces of research to demonstrate that Douglas fir and paper birch trees transfer carbon between them by means of mycelia. Later she postulated that large trees help out smaller younger ones by using this fungal network (interestingengineering.com). The latest scientific studies, conducted at well-respected universities in Germany and elsewhere, confirm and expand on her findings. We are gradually proving to western minds what indigenous cultures have long known from close observation in forests: trees are alert, social, and intelligent. In the best-selling book *The Hidden Life of Trees: What They Feel, How They Communicate*, author and forester Peter Wohlleben has brought those understandings to a wider audience (smithsonianmag.com).

Tree planting and conservation, then, should take into account—to the fullest of our current knowledge—the purposes of the ecosystems with which we engage. Driving down to the Home Depot to find a tree to plant in the back yard with the kids on Saturday morning is probably an activity unworthy of the “ends” of the trees. A few hours of research about tree-planting projects will help us make worthy choices about this most revered of species.

So. Given their innate value as wise beings and their importance to Earth’s ecosystems, what kind of trees are appropriate for “planting” in our homes during the Christmas season? Natural or artificial, or none? The percentage of households putting up a Christmas tree fell from 90 percent in 1989 to 76 percent in 2018. The percentage of real trees dropped even faster: from 47 percent in 1989 to 21 percent in 2018. An Agriculture Department report conveys the challenge this poses for the natural tree industry: In 2002, farmers harvested close to 21 million trees. By 2017 that figure fell to near 15 million (washingtonpost.com).

A real tree requires considerably fewer resources to create and get to the customer than an artificial tree, according to a 2017 peer-reviewed study by WAP Sustainability Consulting in Chattanooga, Tennessee. If people reuse their artificial trees, however, the artificial tree eventually becomes more environmentally benign. The most conservative estimates suggest it takes nine years of use for an artificial tree to be a better choice than buying a real tree every year. WAP says six years is probably a more reasonable guess (latimes.com). It is the manufacture of the plastic tree, from oil, which creates most of its carbon footprint; around two thirds, according to Dr. John Kazer of the Carbon Trust. Another quarter is created by the industrial emissions produced when the tree is made. They are also often shipped long distances before arriving in the shop and then a home (theguardian.com).

The Guardian story also examines what happens to the tree after Christmas. When it comes to disposal of your artificial tree, there are more negative impacts—even if you have kept it ten years or more. A real tree that is recycled – by chipping – or is kept growing in a pot or the

garden, can have negligible or even negative emissions, according to Kazer. But a 6.5-foot-tall real tree could result in a carbon footprint of 16kg CO₂ if it ends up in a landfill because the tree decomposes and produces methane gas, which is 25 times more potent as a greenhouse gas than CO₂. When buying a real tree, Friends of the Earth advises to look for one that is locally produced. Another good option is a tree grown from seed in a pot. These can later be planted in the ground and are different from potted or “pot pressed” trees in which the root system is pruned, which lessens the chance of survival.

Whatever we decide about a seasonal tree or about joining a tree planting project, during this December we might spend time with a special tree in our neighborhood, or take walks among trees in nearby woods. We might go further and engage in “forest bathing,” the practice of relaxation surrounded by woodland. It comes from the Japanese “shinrin-yoku,” which means taking in the forest atmosphere. Originally conceived as a means of staving off work exhaustion, the practice of spending significant time in nature is believed to have a wide number of health benefits: from lowering blood pressure and stress levels, to improving mood and strengthening immunity (standard.co.uk). Our species began in the trees, we lived underneath them for most of human history, and our survival now is tied to theirs as truly as it ever has been. As we celebrate any good thing rare or common during this season, let us honor the trees that came before us and we hope will remain with us all our days and beyond.

Now for the quiz: “What kind of tree is best for a Christmas tree?”

Answer:

One you can hug, of course!