

LOS ANGELES REVIEW OF BOOKS

A Love Affair with a Tree: What One Red Oak Can Teach Us About Climate Change

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PHENOLOGY, THE STUDY OF seasonal changes in nature, is one of humanity's oldest biological records. When frogs first croak, when leaves first bud — the mystery of the natural world is embedded in these recurring signposts of time's passing. In the eighth century, Japanese monks made notes of the first cherry blossoms; French records of grape harvests in Burgundy date back to 1370; Thomas Jefferson kept deciduous records of his garden in Monticello; and, by the 1860s, Henry David Thoreau kept records on the first flowering of plants on his daily walks around Concord.

But in the era of climate change, nature's chronology has grown seriously out of whack. Shakespeare may have referred to wild daffodils as Lent lilies, but what are we to make of the fact that daffodils in England are blooming in December? Or that researchers have documented that the first frost of New England now emerges two months later than just two decades ago? And how is it possible to answer these questions with a measure of hope, without scaring the bejeezus out of ourselves?

It is questions like these that Lynda Mapes addresses in her new book *Witness Tree*. Written in straightforward and sometimes lyrical prose, the book reads as if conceived in a quiet fury. Mapes believes that too much time has already been spent on political obfuscation about climate change. But it isn't too late, she suggests, to be embedded in our natural world. We must not just defend it, she argues, but revel in it. And since trees are our oldest journalists and our first historians, they are the perfect vehicle through which the story of climate change must be told. A story told through a tree is a story people want to hear.

An environmental writer for *The Seattle Times*, Mapes spent nearly three years working on *Witness Tree*, which originated with a Knight Science Fellowship at MIT in 2013. She returned to Massachusetts the following year as a Bullard Fellow for a year-long stay in the Harvard Forest, where she took up residence in an old farmhouse. And it is there that she singled out a spectacular, century-old red oak to serve as her teacher and guide, offering its own testimony of the natural world — a footprint of climate change on the landscape. By narrowing her lens to a single living thing, Mapes tells the largely overlooked story of the delicate seasonal timing of the natural world and how it is being disrupted.

A great deal has already been written about how climate change amounts to the existential crisis of our time. The importance of *Witness Tree* does not flow from any single revelation but from its scope and perspective. Mapes writes of her time in the woods with such genuine wonder and delight that what emerges is an unlikely love story about a reporter and a tree, populated by a cast of sidekicks such as Nora the cow and an old-school scientist who knows how to read the memory of trees. Mapes studies her tree from every angle — lying beneath it, searching the soil atop its roots, using ropes and gear to climb into its canopy 80 feet off the ground. She learns that her tree doesn't just sway side to side in the wind but rides up and down, too.

In the process, Mapes is transported back to the joy of tree climbs as a skinny kid “in my tiny treetop girl nation of one.” These moments of sheer delight brought this reader back to girlhood memories of thrilling solitude high in the branches of a favorite maple. What it means to be by oneself but to never feel alone in the company of nature is one of the underlying themes of *Witness Tree*. “Nature doesn’t need us,” Mapes writes. “We need nature — if we are to persist.”

Mapes is nothing if not meticulous in her reporting, so she auditions different trees — a striped maple and a 350-year-old black gum. She eventually settles on a tree that had sprouted by a stone wall around the time when Model T’s were first coming off the assembly line and our love affair with carbon was revving up in earnest. The red oak is the most common species in the northern hemisphere. If oaks were animals, Mapes writes, they’d be dogs since they’re such a typical part of the landscape.

Once she zeroes in on her target, Mapes hosts a series of “tree soirees,” bringing different experts to meet her tree and get their reactions to it. She enlists the help of a big-tree hunter, a champion climber and her sister, named Bear, a carpenter, a forester, biologists, ecologists, and a gamut of tree scientists. They help her core into the tree’s heart to find out how old it is, dig into its roots, and climb into its canopy — where, like a Disney character, she encounters a menagerie of animals.

What makes *Witness Tree* such an irresistible read is Mapes’s love of language combined with a great talent at rendering nerdy information readable. Mapes writes of her tree with a poetry that is beholden to more than science:

We discovered it gifts a hail of acorns to birds, squirrels and deer mice. It shelters garter snakes, ants, black flies, ferns and lichens. It creaks from cold in frozen nights with snow deep all around. And its bare limbs are beautifully seen in winter against distant galaxies of sharp burning stars.

She waxes rhapsodic over the cocktail of sunlight, water, and carbon dioxide that starts the engine of photosynthesis and sustains the environment. She traces the elegance of how her tree silently draws water through its roots and up to the canopy, passing vapor into the atmosphere. The canopy, it turns out, is the engine of carbon sequestration: as trees draw carbon dioxide into their leaves, they take up half the emission we put into the atmosphere.

Mapes also draws on experts for analyses of the effects of global warming on the environment. Biologist John O’Keefe, a boots-on-the-ground researcher, offers old-school observational data from the past 25 years in this 4,000-acre research forest on former farmlands and pastures west of Boston. As his results show, spring now comes earlier, fall comes later, and winter is getting squeezed on both ends. Scientist Andrew Richardson provides a forest-eye view from bank cameras installed in a tower, as well as satellite imagery that gives a fuller picture of how the forest is changing over time.

Mapes ultimately offers both good and bad news. Trees are gobbling up more carbon and growing faster than at any time in the past 20 years, and they’re using less water to do so. But while her big oak thrives like a gangly teenager, the New England hemlocks are dying because of an aphid-like pest native to Asia that thrives in warmer winters and is expanding its range.

Climate change has never occurred at this pace, faster than trees can adapt. We are now seeing the highest levels of carbon dioxide in the atmosphere in 800,000 years. There are now two seasons at work: nature’s calendar and the seasons made by us. Mapes makes clear that climate change is not just about the weather. It’s

about seasonal changes and their impact on the natural world. Seasons, she found, are lasting longer than the leaves can stay on the trees. Fragility is everywhere.

Still, Mapes is a firm believer in the resilience of nature. A landscape that had been denuded of trees for agriculture and bereft of animals was now “regrown to a forest and resurgent with life.” She views the recovering wild lands and woodlands of the Northeast as a “great green wellspring of hope for the world.” “Deadwood isn’t dead at all,” she writes. “It’s just finding its new purpose, as the food and moisture source that nourishes the next phase of life in these woods. Pine, which once reigned as the largest and most visible species, has disappeared.”

Faced with the epochal challenge of climate change, Mapes remains hopeful. “I have faith,” she writes, that “we’re smart enough to get out of it.” To spread the word, she shares her love beyond the page. Anyone with access to a computer can log onto the webcams at Harvard Forest — a way to see the proverbial forest for the trees and grasp the scale of how nature is responding to climate change.

The writer and environmentalist Terry Tempest Williams has written, “If we can learn to listen to the land, we can learn to listen to each other.” Lynda Mapes’s beautiful book suggests the same idea: if we can preserve a deep and abiding appreciation of one natural thing, such as a tree, we can preserve a more lasting connection with each other and our planet. Returning to the natural world, in effect, allows us to replenish our souls.

Two years ago, I wandered into the Harvard Forest with some of my environmental journalism students, who were excited about meeting up with Mapes. A guest speaker in my class, she had promised us a tour of her beloved oak tree and surrounding woods. When we climbed atop a research tower to peer out over the canopy of trees, it was impossible not to feel a tug of immense hope. A panoramic view such as that brings perspective and the promise of joy. This joy bounces off of every page of Witness Tree.

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