

## Seeing the Forests for the Trees

Habitat suitable for most of the trees you currently find in the region is projected to move northeast as the climate continues to warm.

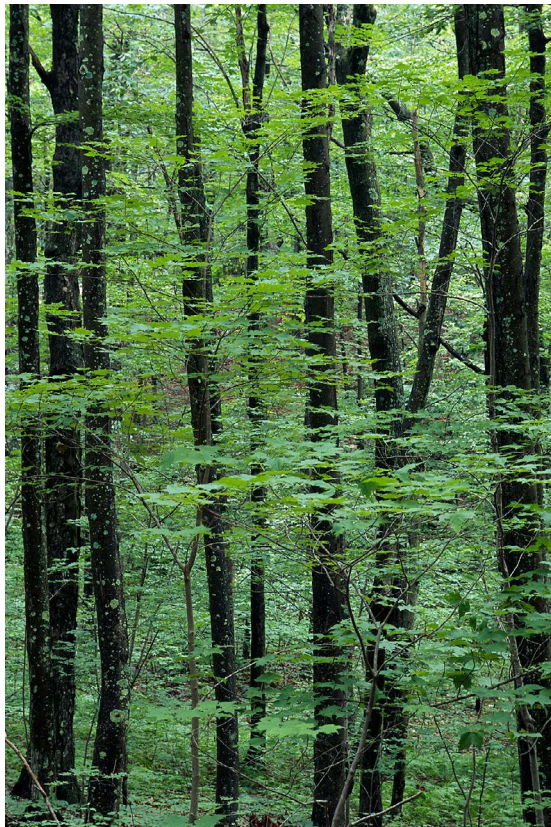
Most trees can exist in less than ideal habitat conditions, but with warming temperatures, they may become less productive, and more vulnerable to competition and other stressors, ultimately succumbing to better suited species.

The good news is that over the past 120,000 years of gradual climate shifts, there have been virtually no climate-driven extinctions of tree species in the Northeast because trees have been able to adapt.

But the current projected rate of change may be too fast for some species to keep up. In nature's complex scheme of things, the ability of trees and plants to adapt depends on the speed at which weather and animals move their seeds — through land, air and water — and if this movement is obstructed. Keeping trees and woodlands alive and healthy is important across the board, because forests and terrestrial ecosystems regulate the timing and flow of surface and groundwater discharges to streams, rivers, drinking water reservoirs and bays. Also, they provide habitat for animals including those of the human variety that enjoy weekend hikes, camping, and bird watching.

Given this ever-changing series of obstacles and challenges, here are some basic premises to understand:

- Suitable habitat for spruce and fir trees is expected to diminish or retreat. You'll get the news when knotty pine becomes the most fashionable wood to use in your gourmet kitchen.



Spring forest at Lincoln Woods State Park.

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- Northern hardwoods habitat will likely shift northward. It seems to make sense, but as gas prices increase, miles of transportation costs are reflected in every building plank you use.

- Suitable habitat will continue shifting northward, as much as hundreds of miles by late-century,

impacting most of the currently important species: sugar maple, red maple, black cherry, balsam fir, red spruce, yellow birch, quaking aspen, white pine, eastern hemlock, American beech, and white ash. Those are the stars of the forest, but habitat reduction is not good for any species. Imagine New England without the bright leaves of autumn and the roadside stands with maple syrup. The tourism from skiing, leaf-peeping and maple products represents a major economic bite.

- Climate change will likely increase habitat for oaks and sweet birch. Some trees just have what it takes to adapt.

- Warmer soils, faster decomposition, and decreased winter snowpack could accelerate nitrogen loss from

forests. Combine this with stronger storms and more rain and we will likely see more nitrogen (which are nutrients) making its way into water bodies. Too much nitrogen in lakes, streams, and estuaries can have an enormous impact on food chain cycles and rob water bodies of oxygen, among many other potentially serious consequences.

- Higher carbon dioxide has been shown to speed up the spread of invasive plants and resistance to common herbicides used to control them. (Which you probably shouldn't be using anyway.)