An increasing number of cases are appearing in scientific literature that document changes among species patterns. Such changes include the timing of migration, the timing of appearance in spring and disappearance in autumn, and flowering dates, just to name a few. Evidence is mounting that these changes will continue to accelerate through the century.

Though tree habitats change slowly relative to most animals and many herbaceous plants, the fossil record and multiple models show that they too are destined for changes in composition and abundance. Catastrophic events like fire or ice storms could hasten these changes as well, even though large lag times may normally occur due to the long life spans of trees.

Our work was designed to show the potential changes in suitable treespecies habitat that are likely to occur as a result of direct human impacts, such as land-use change and land-management practices, or from large disturbance events such as ice storms, hurricanes, and escaped fires. However, large disturbance events could also serve as accelerators that move the community into compositions more akin to the suitable habitats discussed here.

As carbon dioxide emissions increase, too does the suitable habitat for sweetgum and other tree species not normally found in the Northeast. The larger, more noticeable changes are likely to occur as a result of direct human impacts, such as land-use change and land-management practices, or from large disturbance events such as ice storms, hurricanes, and escaped fires. However, large disturbance events could also serve as accelerators that move the community into compositions more akin to the suitable habitats discussed here.

In summary, climate change will provide a driving force over the next few decades to change the forest composition in the region surrounding the Delaware Estuary. These changes are expected to be gradual, however, as trees live a long time. And just because the climate is more suitable for a different species, that does not mean that already established trees will not survive well beyond the time their habitat is no longer as suitable. Thus, we cannot put a timeframe on the compositional changes discussed here.

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For further insight into the work being done by the USDA Forest Service's Northeastern Research Station, including in-depth species analysis, please visit its website at www.fs.fed.us/ne.