

Central Hardwood-Pine

Low Vulnerability (medium evidence, medium-high agreement)

These forests support a diversity of tree species and occur over a wide range of habitats. Many species are tolerant of dry soil conditions and fire, although young trees may be sensitive to severe drought and fire. Several oak and hickory species are likely to benefit from projected changes in climate.

Neutral-Positive Potential Impacts

Drivers: The central hardwood-pine forest system is at the northern extent of its range in the region, occurring on a wide variety of dry-mesic sites and coarse, well-drained soils. These fire-adapted ecosystems are generally expected to be able to cope with increased risk of wildfire under warmer and drier conditions (Manomet Center for Conservation Sciences and Massachusetts Division of Fisheries and Wildlife [DFW] 2010a, Manomet Center for Conservation Sciences and NWF 2013b), although it is unclear whether fire occurrence will actually increase due to suppression by humans in this relatively densely populated region (Chapter 4).

Dominant Species: The many tree species found in these locations, including black, chestnut, scarlet, and white oak and pignut and shagbark hickory (Chapter 4), are generally expected to be able to persist on these sites into the future. These species may also potentially expand to new areas as conditions become suitable. At the same time, when extremely hot and dry conditions prevail, species establishment may be impaired for these trees in southern and coastal New England (Chapter 4).

Stressors: Climate change could amplify several stressors to central hardwood-pine forests. Insect pests, such as winter moth and southern pine beetle, are expected to cause more frequent and severe damage under climate change, and new pests present

unknown risks. White-tailed deer populations may also increase with warmer winters, which may hinder regeneration as well as the expansion of this forest type. Invasive species such as buckthorn, honeysuckles, and garlic mustard can also hinder regeneration, and are poised to increase in the future.

Moderate-High Adaptive Capacity

Central hardwood forests are generally expected to fare better than other forest systems under climate change, in part because of an ability to thrive under relatively warm and dry conditions. These forests also contain a variety of oak and hickory species with diverse traits, including drought tolerance and varied reproductive strategies. This diversity may increase the number of ways in which the ecosystem can adjust to changing conditions while maintaining important ecosystem functions. This forest type, however, is often found in areas that have a high degree of historical or current human disturbance, and fragmentation, invasive species, or other threats that can reduce the adaptive capacity of certain locations. A history of fire suppression and reduced light reaching the forest floor has facilitated a shift to more mesic conditions and associated hardwood species (e.g., red and sugar maple, American beech, yellow-poplar). In many forests, regeneration of drought-tolerant oak and hickory trees is currently reduced due to fire suppression and competition from more shade-tolerant mesic species.



A central hardwood-pine forest in central Massachusetts. Photo by Anthony W. D'Amato, University of Vermont, used with permission.



A central hardwood-oak forest in southern New England, marked for forest harvest. Photo by Maria Janowiak, U.S. Forest Service.