

Is There A Forest In Your Future?

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Massachusetts forests are at risk. How we manage our forested lands in Massachusetts will affect our state's ecosystems and economy, our future climate, and our quality of life. Let's look at what's at stake and what can be done.

"The best friend on earth of man is the tree. When we use the tree respectfully and economically, we have one of the greatest resources on earth."

~ Frank Lloyd Wright

There is a lot to be said for the forests of Massachusetts. Our commonwealth, the third most densely populated state, has the eighth highest percentage of forested land of all the states. About 60-65% of Massachusetts land is forested. Those forests are an important resource:

- Forests are essential to fighting climate change. Massachusetts forests absorb and sequester more than ten percent of the state's carbon emissions annually. (More recent reports indicate trees in the eastern United States have been increasing their carbon uptake even more. They have been leafing out earlier and dropping their leaves later as the climate has warmed, providing more time each year for their leaves to remove carbon dioxide from the air through photosynthesis.)
- Forests are essential protectors of soil and water resources. Forests keep soil intact and prevent it from eroding into nearby bodies of water. Many public potable water sources are protected by forests. The forested watershed of Quabbin Reservoir protects the quality of the drinking water used by millions of Massachusetts residents daily.
- Forests are critical habitat for wildlife. Biological diversity in Massachusetts depends on the protection of forested habitats and their associated plant and animal species.
- Forests provide numerous recreational opportunities. Many of our state parks are located in forests, where people camp, hike, bird, fish, commune with nature, and more. Our forests help comprise the scenic landscape of New England that attracts visitors from near and far.
- Forests are a source of wood products. For example, 25% of the wood in the new Walden Pond Visitor Center was sawn and finished in Massachusetts, including the red maple siding, ash decking, red oak flooring, black locust trellis, and red oak furniture.

"The trees are man's best friends; but man has treated them as his worst enemies. The history of our race may be said to be the history of warfare upon the tree world. But while man has seemed to be the victor, his victories have brought upon him inevitable disasters."

~ Nathaniel H. Egleston

Most of Massachusetts was forested when the European colonists arrived. Native Americans earlier had cleared some land for agriculture and hunting success. The colonists, however, almost immediately began clearing forest land for agriculture and for wood products, using downed trees for firewood and to construct homes and other buildings. Clearing of land for agricultural, residential, and commercial development, and for forest products continued and accelerated. During a 50-year period in the 1800s, seventy percent of Massachusetts land was cleared for pasture, croplands, orchards, and buildings. Other lands were repeatedly harvested for firewood and timber. By the late 1800s, forests began to return as the state economy changed and farms were abandoned. Large scale clearcutting occurred again in the early 1900s in response to market demands for firewood and wood products. After that, forest area again increased, hitting a peak acreage in the 1950s. Since then, forest acreage has decreased, with conversion of forest land to residential, commercial, and industrial uses.

How much forest land is in Massachusetts? A 2009 estimate was approximately 3,187,000 forested acres in Massachusetts (about 63% of Massachusetts). Of those, 943,000 acres are protected forest lands owned by the federal, state, or municipal governments, with some acres owned by conservation organizations and land trusts. Much of the protected forest lands are state parks and recreation areas, water supply protection areas, and municipal forests. The remaining 2,244,000 acres of forest lands are privately owned and not protected as forests. To put that in perspective, if all the unprotected forest lands in the state were developed, we would have less forested land in Massachusetts than at any time in recorded history. There are fewer acres of protected forests in Massachusetts now than the approximately 1,500,000 acres of forests that existed in Massachusetts in late 1800s, the low point of forested land acreage before the forests began to return.

What are the risks to Massachusetts forests? Perhaps the largest risk is from development. Massachusetts has lost tens of thousands of acres of forested lands since the 1960s as forests have been -- and continue to be -- converted to other uses. Converting forest land to other uses eliminates all the benefits that the forest had provided. It also fragments forests: the remaining woodlands are smaller and no longer connected to each other. Isolated forests are more vulnerable to harm and decline. They lose their ability to function well and the services they provide for us are diminished.

Other current risks to our forests include non-native invasive plants, insects and diseases, heavy deer browse, and climate change. The changing climate also increases the vulnerability of many U.S. forests to fire, insect infestations, drought, and disease outbreaks. For example, the gypsy moth outbreak this year, which harmed many Massachusetts woodlands, can be attributed to the severe drought which prevented the germination of the spores of the fungal pathogen that infects and controls the moth.

The National Oceanic and Atmospheric Administration has written that, "[T]hese disturbances (to forests) raise the potential for large releases of carbon dioxide back into the atmosphere. Despite recent increases in forest growth due to elevated carbon dioxide and temperature changes, it remains unclear how future net forest carbon storage in the

United States will respond to accelerating mortality and trends in land use and forest management.”

“Acts of creation are ordinarily reserved for gods and poets. To plant a pine one need only own a shovel.”

~ Aldo Leopold

A recent publication, [*Increasing Forest Resiliency for an Uncertain Future*](#), provides a framework for addressing the many challenges faced by New England forests. The framework goal is to maintain and enhance forest resiliency because a resilient forest will respond to a disturbance by resisting damage or stress and recover quickly. The goals of forest resiliency are: 1) keeping the forest forested and connected; 2) reducing stressors; 3) reducing vulnerabilities; and 4) providing refuge. *Increasing Forest Resiliency* identifies characteristics of a resilient forest and how to maintain and improve those characteristics. The methods to do so will vary based on the unique qualities of each forest, its location, its land use history, and its landscape context.

It remains critical that we keep forests as forests. Converting forest land to commercial or residential development dooms that part of the forest to extinction and harms the surrounding landscape. As noted in *Increasing Forest Resiliency*, “conversion of forests to other land uses eliminates all the benefits that forests provide. Simply put, no forests equals no forest benefits.”

Changes in forests are natural and healthy but our forests are facing more stressors than ever. Increasing the resilience of forests to those stressors, that is, making forests less vulnerable to those threats, is essential work for everyone concerned about the world we will leave for future generations. We can protect Massachusetts forests so they continue to blunt climate change effectively and economically, protect our land and water resources, provide habitat for wildlife, offer recreational and economic opportunities, and remain a functional part of the ecosystem. Let's not repeat in the 21st century the Massachusetts forest story of the 19th century. We know we need forests for the many ecological services they provide. Keeping our forests intact and high-functioning must be a 21st century priority.

“Going to the woods is going home.”

~ John Muir

Forests may have been home to our long-ago ancestors. There is something primal about our connection to forests that has attracted writers, poets, and artists. Forests are known but unknowable, sometimes welcoming but sometimes mysterious and foreboding. They are lovely, dark, and deep in a poem by Robert Frost. Little Red Riding Hood walked through the woods, stalked by the wolf who hid behind trees, bushes, and shrubs until overtaking her at her grandmother's house. Hansel and Gretel were abandoned in the forest by their stepmother and then captured by an evil witch who lived deep in the forest. The documentary filmmakers in the Blair Witch Project disappeared forever after entering the deep woods.

John Muir tells us that “the clearest way into the universe is through a forest wilderness.” A forest can fill our need for connection with nature. A forest may provide opportunity to camp in a wooded glen, hike to an overlook, fish a well-shaded trout stream, bird on a spring morning, snowshoe in winter, or just be content to commune with nature. Henry David Thoreau claimed he “frequently tramped eight or ten miles through the deepest snow to

keep an appointment with a beech tree, or a yellow birch, or an old acquaintance among the pines." Others may do their best forest walking in the summer, when the air is dense, dappled sunlight shines down through a leafy canopy, the deer are well fed, the wild turkeys well hidden, and the young birds fledged. Or perhaps in autumn, when New England woodlands are colored in reds, oranges, and yellows and the leaves on the forest floor crinkle underfoot. Each season in the forest offers a special way into the universe.

Henry Wadsworth Longfellow opens his epic poem, *Evangeline*, with:

THIS is the forest primeval. The murmuring pines and the hemlocks,
Bearded with moss, and in garments green, indistinct in the twilight,
Stand like Druids of eld, with voices sad and prophetic,
Stand like harpers hoar, with beards that rest on their bosoms.
Loud from its rocky caverns, the deep-voiced neighboring ocean
Speaks, and in accents disconsolate answers the wail of the forest.

However you may hear the wail of the forest, and whether you choose to venture into the woods or not, we are fortunate to have much forested landscape in Massachusetts. Its continued existence will depend on us and our continued good fortune will depend on it.

This essay was inspired by [MACC's Fall Conference 2016: Managing Massachusetts Forests: Conservation, Stewardship, and Regulation](#).

Sources of information used in this essay include: *An Assessment of the Forest Resources of Massachusetts*, by Avril L. de la Crétaz, Lena S. Fletcher, Paul E. Gregory, William R. VanDoren, and Paul K. Barten, prepared for the USDA Forest Service, June 2010; *The influence of land use and climate change on forest biomass and composition in Massachusetts, USA*, by Jonathan R. Thompson, David R. Foster, Robert Scheller, and David Kittredge, *Ecological Applications*, 21(7), 2011, pp. 2425–2444; In response to warming, Eastern forests inhaling more carbon dioxide than they're exhaling, <https://www.climate.gov/news-features/featured-images/response-warming-eastern-forests-inhaling-more-carbon-dioxide-theyre> (accessed September 16, 2016); *Carbon Sequestration in Massachusetts Forests as an Offset for Energy Sector Carbon Dioxide Emissions*, by Minda Berbeco and Colin Orians, <https://www.researchgate.net/publication/237468359> (accessed September 16, 2016); *Increasing Forest Resiliency for an Uncertain Future*, by Paul Catanzaro, Anthony D'Amato, and Emily Silver Huff, October 2016, https://www.researchgate.net/publication/309286002_Increasing_forest_resiliency_for_an_uncertain_future (accessed November 4, 2016); and <http://masswoods.net/>.

(Here's an example of the world is coming to understand that forests are essential: The Netherlands government announced last month it intends to increase that country's forested area by as much as twenty-five percent over the next thirty years as part of its plan to reduce carbon emissions and boost timber production. Currently, the Netherlands are mainland Europe's most densely populated country with the smallest percentage of forested land in Europe. <http://www.citylab.com/design/2016/10/the-netherlands-will-increase-its-forests-by-a-quarter/505331/>)