

Our Local Tree Canopy

At GMLC's Annual Meeting in 2022, Erick Carlson, PhD from University School gave a lecture called "Our Local Tree Canopy". Erick identified three tree species in our area that have different challenges facing them. Beech, Ash and Sugar Maple are major components of our tree canopy that either has changed, or is already changing. Beech leaf disease and emerald ash borer are currently being studied for the impact they will have over the next 10 to 50 years from now. Across the 230-acre University School campus 30% of the 15,000 trees are beech, and 90% of them have signs of progressive disease.

Beech Leaf Disease is a small clear worm called a nematode, which overwinters in leaf buds and emerges in the spring where they form dark strips between lateral veins in the leaves. Nematodes zap the energy in the leaves and the trees begin to defoliate, ultimately killing the tree. This disease has been found in Ohio, Pennsylvania, Connecticut, Rhode Island, New York, Massachusetts. It is believed that nematodes are possibly carried by birds across these areas.

As trees die, the canopy has an increase in rain and sunlight, causing increased soil temperatures, which makes it difficult for new saplings to thrive. Grasses, flowers and other plants that begin to grow there, are usually invasives that fight with the natural forest for survival.

The *Emerald Ash Borer* is a beetle that lives just under the bark, the only part of the wood that is actually living. The beetles eat away the living tissues which girdles the trees and moves water up and nutrients down. The Ash Borer never leaves the area even after the trees have been destroyed, so sapling ash never get a chance to grow. Since ash seeds only last in the seedbank for 40-50 years, the struggle is to save enough ash seeds to rebuild the forests once a solution is found for the Ash Borer.

Sugar Maple are a long-lived species also making up a great portion of our landscape. The changing climate has swung in both ways between hot and cold temperatures, and more sensitive species like maple respond to very small shifts in climate. The small tubes around tree trunks, called xylem conduct water from the ground to the leaves at the top of the tree. If canopy exposure and warm conditions damage the xylem, the tree dies. For maples, changes in precipitation, soil characteristics, and the shortening of freeze-thaw cycles and expansion of invasive tree pests will all impact both maple trees and syrup production.

"Along Mayfield Road by West Hill Drive", Dr. Carlson said, "I'm seeing more and more light coming through the forested hillside. There is one big dead beech tree that's down as you're heading towards the valley, and right through there is 100% beech forest, a half an acre. They didn't have a single leaf on them. If you're looking at a mixed forest of beech and maple as soon as you go in there and you're like, wow, it's kind of bright in here. *This is the destruction of the tree canopy.*"

These main species make up the bulk of the Gates Mills tree canopy. GMLC has also noticed continued damage to trees on our conserved properties. We are making efforts to work with the Village to research and mitigate this damage through our, "Plant a Tree" project.