



## New Forest Health Threat

Beech leaf disease (BLD) is a newly described disease, first identified in Ohio in 2012. The disease complex is associated with a foliar nematode species, *Litylenchus crenatae*. The disease causes damage to a tree's leaves, leading to reduced vigor and can eventually lead to tree mortality. Beech Leaf Disease (BLD) has affected American (*Fagus grandifolia*), European (*F. sylvatica*), Oriental (*F. orientalis*), and Chinese (*F. engleriana*) beech tree species. While it is believed that movement of the foliar nematode is responsible for the spread of infection, the primary modes and methods of dispersal and introduction to new areas is not yet clear. There are still many unknowns about how the disease is progression, how new trees are infected, or how long it takes for symptoms to develop. Infected trees of all ages and in both urban and forested settings have been observed in Massachusetts.



BLD infected American Beech, Framingham, MA; N. Keleher, MA DCR

## Disease Spread and Current Range

BLD has rapidly spread since its initial discovery in 2012. As of 2022, BLD had been detected in Connecticut, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Virginia, and the Canadian Province of Ontario. The first detection in Massachusetts was in June 2020 in the town of Plymouth. Infected trees have since been confirmed in all Massachusetts counties. The DCR Forest Health Program is surveying beech trees across the state to determine the extent of the disease in Massachusetts. We are working to monitor the disease progression and understand the long term impacts to our forests.

Researchers are currently examining insects and birds as potential vectors for BLD spread, as well as the role of human-assisted movement of the nematodes.

## How to Report BLD?

If you have found a beech tree with suspicious damage or BLD symptoms, let us know! Public reports help the DCR Forest Health Program better understand the spread and impact of the disease in Massachusetts. The drastic increase in Massachusetts town and county confirmations in 2022 was driven by an outpouring of reports from concerned citizens. You can use our online form to easily submit reports of BLD, <https://arcg.is/1Svrz40>.

# How to Identify BLD

BLD is most evident through examination of the leaves. Dark green bands form between the lateral veins of individual leaves. This dark green banding is easily visible immediately upon bud break in the spring and will remain present on the leaves until they drop. For diagnostic purposes, it is important to note that leaves that unfurl without symptoms will remain asymptomatic throughout the growing season. It is easiest to find symptomatic leaves by looking upward into the canopy on a bright sunny day. Affected leaves may be visible in all layers of the canopy, however, in the earlier stages of infection they are generally most prevalent in the lower canopy. As the disease progresses, more leaves on a tree will be symptomatic and individual leaves will have more banding. Leaves with severe symptoms may look deformed, shrunk, or shriveled and have a thickened, leathery texture. These heavily infected leaves are usually dropped by the tree in early summer and, if the tree is healthy enough, a secondary flush of leaves may emerge. Once the disease has progressed to final stage of tree decline, the overwintering buds will be so damaged by the nematode that leaves will be unable to break and emerge in the spring.



Dark-green banded leaves viewed from below; E. Peterson MA DCR



Severely infected leaves exhibiting shriveled, curled, and leathery appearance; E Peterson, MA DCR



Beech aphid damage; N Keleher, MA DCR

## Other Common Beech Damage

Our beech trees are host to other insects and diseases that cause damage to leaves. Feeding from insects like mites and aphids can injure leaves and may cause discoloration. This type of damage is usually lighter in color and does not have the same banding pattern as BLD. Fungal diseases such as anthracnose may cause leaves to develop brown or black spots on leaves.

American beech in Massachusetts are also commonly impacted by beech bark disease. This disease complex causes cankers to develop on the trunk of the trees. As infected trees decline, they may exhibit canopy dieback and browning of leaves.

