USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Eastern Region State Private and Tribal Forestry | R9–PR–001–21 | Revised May 2024

Pest Alert

Beech Leaf Disease

Beech leaf disease (BLD) is a novel disease affecting American beech (*Fagus grandifolia*) in North America. Symptoms of BLD have also been observed on European (*F. sylvatica*), Oriental (*F. orientalis*), and Chinese (*F. engleriana*) beech species, which are occasionally planted as ornamentals. The disease is found in areas throughout the northern edge of the range of American beech. Recent detections in tree nurseries have caused significant concern among forest managers, homeowners, and nursery growers. BLD symptoms have been shown to be caused by a newly recognized subspecies of the anguinid nematode *Litylenchus crenatae mccannii*. Nematode infection mechanisms are not fully understood, but research indicates the nematode is associated with buds and leaves of beech of all age classes.

Identification and Description

Early symptoms of BLD include discolored stripes or bands between lateral veins of leaves that are visible immediately upon bud break in the spring (figure 1). Affected leaves may be unevenly distributed in the lower canopy. Banding is most apparent when viewed from below, looking upward into the canopy. Leaves with severe symptoms are heavily banded, shrunken, and crinkled with a thickened, leathery texture (figure 2) that often leads to chlorotic banding later in the season (figure 3). Aborted bud development and premature leaf drop result in a thinning of canopy cover over time. Tree mortality within 2 to 7 years has been observed in all age classes but appears to be more common for smaller trees (less than 5 inches diameter at breast height).

Current Range

Symptoms of BLD were first observed in northeast Ohio in 2012 and have since been detected in Connecticut, Delaware, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia, and the Canadian Province of Ontario (figure 4). Recent increases in BLD detection may be a result of expanded search efforts in addition to true spread.

BLD range appears to be spreading primarily toward the east based on the locations of new county detections in recent years. The nematodes are possibly dispersing aerially by wind and precipitation. Additional nematode dispersal modes currently being studied include insect and avian vectors as well as human-mediated movement. There is likely a delay between initial nematode infestation and BLD detection as *L. crenatae* has occasionally been confirmed in asymptomatic tissue at the molecular level before symptoms are observed.

Figure 1.—Banding appearance associated with BLD. Courtesy photo by Tom Macy, Ohio DNR.

Figure 2.—Banding appearance and shrunken leaves associated with BLD. Courtesy photo by Cleveland Metroparks.

Figure 3.—Advanced symptoms of BLD with chlorotic striping. USDA Forest Service photo by Cameron McIntire.

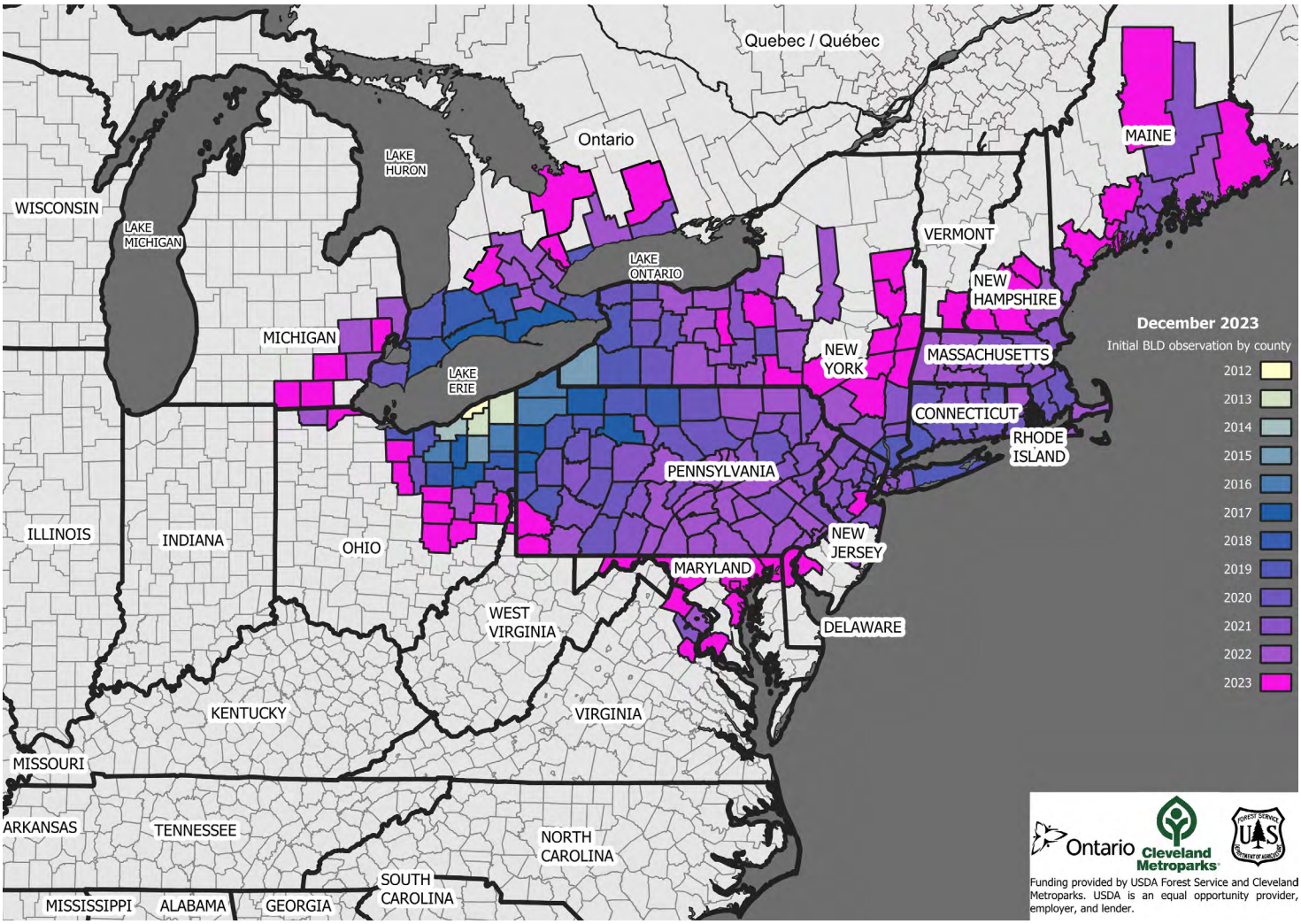

Figure 4.—Known range of BLD, from initial observation in 2012 to its current reach expanded annually by county. Map courtesy of Cleveland Metroparks with USDA Forest Service cooperation.

Management

No treatments are currently available for trees affected by BLD; however, several methods are being studied. Common mitigation strategies are likely to be effective at reducing the incidence of BLD and decreasing the likelihood it is moved to new areas. These strategies include destroying infected plant material after removal and avoiding transport of plant material (including branches, twigs, soil, leaves, and whole seedlings) from affected areas. Chemical treatments are currently being evaluated, please contact a local certified arborist to inquire about application recommendations.

Be on the Lookout

If you observe symptoms of BLD, please contact your state or local forest health specialist.

For more information, contact your local forest health specialist or the authors:

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