Thousand Cankers Disease

Geosmithia morbida Spores Isolated from a Weevil

by Michele Warmund and Jerry VanSambeek

Recently, Geosmithia morbida, the canker-causing fungus associated with thousand cankers disease, was isolated from Stenomimus pallidus weevils (Figure 1) found on two stressed black walnut trees in Yellowwood State Forest near Nashville, Indiana. This is the first report of Geosmithia fungus occurring on an insect other than the walnut twig beetle (Pityophthorus juglandis) (Figure 2).

Geosmithia morbida vectored by the walnut twig beetle are the causal agents for thousand cankers disease found originally in the western United States. More recently, it has been found in one or more counties of Tennessee, Pennsylvania, Virginia, North Carolina, Ohio, and possibly Maryland and has the potential to have a major impact on the walnut resource in the Eastern United States. Typically, walnut twig beetles, which are smaller than a pinhead, bore into walnut branches and deposit the fungus that produces a dead area or canker about the size of a small coin under the bark (Figure 3). Typically the fungus infects already stressed trees and limits the transport of nutrients in the phloem of the tree. As the cankers coalesce, branches gradually die, the canopy thins, and ultimately these trees die. Thousand cankers disease can kill walnut trees three to ten years after symptoms are visible.

In Indiana, Geosmithia spores were discovered on S. pallidus weevils captured as part of a survey by the U.S. Forest Service-led effort in cooperation with scientists from the University of Missouri and Purdue University. As a part of the survey, walnut trees or branches were girdled, attracting a wide range of bark and ambrosia beetles that were later captured using emergence buckets. More than 16,000 beetles, weevils, and parasitoids were captured and a subsample was screened for the fungal spores carried in mycangium or attached to the adult insect. S. pallidus weevils were also captured in Missouri but may not have been screened for fungal associates. The range of S. pallidus is in the eastern United States from Maryland to Missouri and is found on dead oak trees and under bark of wounded hickory and black walnut trees.

Figure 1. Stenomimus pallidus weevils.

Photos by J.C. Ciegler

Figure 2. Pityophthorus juglandis, a vector of thousand cankers disease found in several locations.

Photo by J. LaBonte

To date, there have been no reports of thousand canker disease in Missouri. An exterior quarantine, prohibiting the movement of untreated walnut wood products, with bark and all hardwood firewood, from states known to have thousand cankers disease is in place to limit the spread of this disease into Missouri. If you suspect thousand cankers disease on declining walnut trees, please take digital photos of the tree, its leaves, and symptomatic branches and contact the Missouri Department of Conservation (573) 815-3947.

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