



Field Guide:

Walnut Twig Beetle

This sneaky pest and its fungus friend pack a double punch to black walnut trees, which are valuable sources of lumber for woodworking and edible nuts.



Plant
Protection
Program

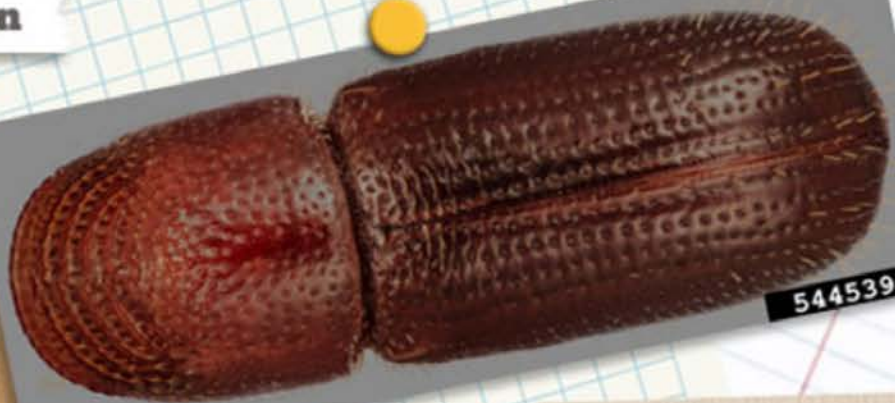
AMERICAN PUBLIC GARDENS ASSOCIATION

Photo: Ned Tisserat, Colorado State University, Bugwood.org

WALNUT TWIG BEETLE

Identification

Highly magnified top view of the Walnut Twig Beetle (*Pityophthorus juglandis*). >>



Walnut Twig Beetles are so incredibly tiny and reproduce so fast that over 23,000 adults (found in two just two logs) can fit in this small vial! >>



Walnut Twig Beetles are TINY! Adults are usually about 0.07 inches (1.7 millimeters) long.



Highly magnified side view of the Walnut Twig Beetle (*Pityophthorus juglandis*).

PHOTO CREDITS

5445393, 5482204 Steven Valley, Oregon Department of Agriculture, Bugwood.org 5406057, 5445294 Whitney Cranshaw, Colorado State University, Bugwood.org



WALNUT TWIG BEETLE

Life Cycle



<< Close-up showing both larval (milky white) and adult (reddish-brown) stages of the Walnut Twig Beetle.

Close-up showing both Walnut Twig Beetle larva and the white powdery spores of the *Geosmithia* fungus that causes the tree to develop cankers and die. >>

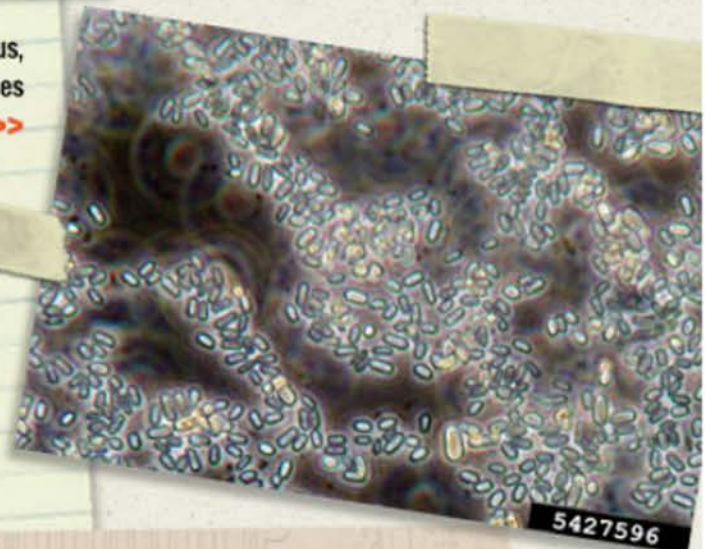


<< Adult beetles spend the winter within cavities excavated in the bark of the trunk. They resume activity by late-April and most fly to branches to mate and initiate new tunnels for egg galleries. During tunneling the *Geosmithia* fungus is introduced and begins growing in the tree's wood.



Asexual spores of the fungus, *Geosmithia morbida*, that causes Thousand Cankers Disease. >>

Larvae feed for 4-6 weeks under the bark in meandering tunnels that run perpendicular to the egg gallery and pupate at the end of the tunnel. Adults emerge to produce a second generation. Peak flight activity of adults occurs from mid-July through late August and declines by early fall as the beetles enter hibernation sites.



<< Colony of the fungus, *Geosmithia morbida*, that causes Thousand Cankers Disease.

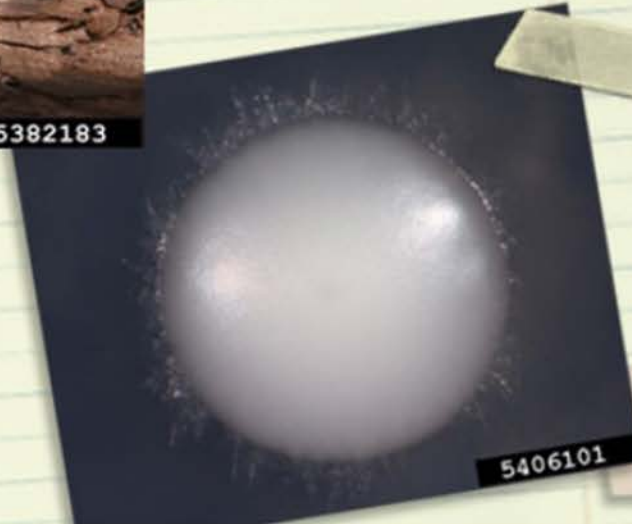


PHOTO CREDITS

5024090, 5382183, 5406040 Whitney Cranshaw, Colorado State University, Bugwood.org 5406101 Ned Tisserat, Colorado State University, Bugwood.org 5427596 Alan Windham, University of Tennessee, Bugwood.org 5445394 Steven Valley, Oregon Department of Agriculture, Bugwood.org

WALNUT TWIG BEETLE

Host Trees 1



5448915

The bark of black walnut (*Juglans nigra*) is usually light brown, ridged and furrowed with a rough diamond pattern. Walnut has large compound leaves (12-24 inches long) each of which has 10 to 24 leaflets. >>



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<< Black walnuts grow to be a medium to large tree up to 100 feet in height and usually have a straight trunk and narrow crown under competition in the forest.

<< Branch end of black walnut showing the alternate arrangement of its large compound leaves.



5454701



5399728

Grove of young black walnut trees.

PHOTO CREDITS

5448915 Vern Wilkins, Indiana University, Bugwood.org 5454701 Jason Sharman, Vitalitree, Bugwood.org 0008447 Paul Wray, Iowa State University, Bugwood.org 5399728 Robert Vidéki, Doronicum Kft., Bugwood.org



WALNUT TWIG BEETLE

Host Trees 2

The young fruit of black walnut is light green, round and 2 - 2 1/2 inches (5-6 centimeters) across.



<< Close-up of flower spikes on a black walnut tree. These appear in late spring, usually near the end of twigs and are 2.5-5.5 inches long (6-14 centimeters) long.

To identify black walnut in winter look for tan buds that are alternately arranged on the stem. Leaf scars are 3-lobed, resembling a "monkey face." >>



<< The husk of the walnut fruit turns black as it ripens in late summer to fall. Inside the husk you can find an irregularly furrowed, hard nut that contains sweet, oily and edible meat.

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<< Cross section of black walnut twig showing the chambered sections of pith.

PHOTO CREDITS

5470912 Lyndon Photography, Bugwood.org 5474407, 5454059 Rob Routledge, Sault College, Bugwood.org 0008149, 0008552 Paul Wray, Iowa State University, Bugwood.org

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WALNUT TWIG BEETLE

Symptoms



<< Close-up of bark showing small piles of sawdust created by beetle tunneling.



<< Tiny exit holes created by adult Walnut Twig Beetles as they leave the tree.



<< Yellowing leaves at branch ends can be an early symptom of dieback from Thousand Cankers Disease.



Black walnut tree in decline from Thousand Cankers Disease and showing dieback in the upper canopy.



PHOTO CREDITS

5382032, 5406044, 5406056 Whitney Cranshaw, Colorado State University, Bugwood.org 5458325 Karen Snover-Clift, Cornell University, Bugwood.org 5406067 Curtis Utley, CSUE, Bugwood.org



WALNUT TWIG BEETLE

Damage



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Close-up of galleries created by Walnut Twig Beetle tunneling under the bark. >>

<< Close-up of walnut branch showing the early stages of canker development around beetle tunnels.



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Dark staining caused by *Geosmithia* cankers in black walnut. As these cankers grow together they stop the flow of water and nutrients in the branch and dieback occurs.



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<< Example of a large trunk canker caused by the fungus *Fusarium solani* that can also occur on trees in advanced stages of decline.

PHOTO CREDITS

5406091, 5406087 Ned Tisserat, Colorado State University, Bugwood.org 5024088, 5406066 Whitney Cranshaw, Colorado State University, Bugwood.org

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Help them do battle with invasive bugs and nasty fungi that threaten trees and plants.

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Why Do Plants Need Heroes?

Every year, plant pests and diseases damage and kill millions of trees, both in our neighborhoods and in natural areas. This damage has a negative impact on vital ecosystem services like air and water purification and costs billions of dollars in cleanup and lost revenue.

Who are the Plant Heroes?

The Plant Heroes are four young adults who share a love of nature and interest in science. A non-governmental organization (NGO) has heard about their passion and invited them to join together as a "super team" to detect and combat bugs and diseases that harm plants and ecosystem health. The Plant Heroes scout for these threats and report suspicious sightings to their county extension or local forester, who contacts officials and provides mission details and scientific supplies in order to defeat the bad bugs and diseases.

How can you be a Plant Hero?

Help neutralize the threat of plant pests and diseases by becoming a part of the Plant Hero team. Take the Plant Hero Pledge and explore the website to learn more about what to look for and how to report suspicious plant pests and diseases. The more you know, the more you can protect the plants in your own yard, neighborhood and community!

Plant Heroes is brought to you by the American Public Gardens Association

Founded in 1940 as the American Association of Botanical Gardens and Arboreta, the American Public Gardens Association adopted its new name in 2006. Over the last seven decades, the Association's has emerged as the premiere association for public gardens in North America.

Today, the Association's 500 member institutions are located throughout the United States, the District of Columbia, Canada, and seven other countries. Our vision is "A World Where Public Gardens Are Indispensable" as they provide botanic, conservation, community, education, and economic resources to their community.

The Association is committed to increasing the knowledge of public garden professionals throughout North America—through information sharing, professional development, networking, public awareness, and research—so that they have the tools to effectively serve visitors and members.



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