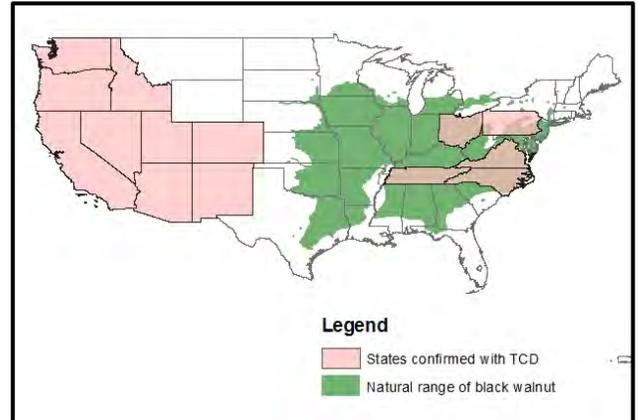


# How to Detect Thousand Cankers Disease (TCD) on Black Walnut in the Field

Wisconsin DNR Forest Health Protection  
February, 2014

Dieback and mortality of eastern black walnut (*Juglans nigra*) is caused by an insect/disease complex called Thousand Cankers Disease (TCD), and has been observed in western states. The first confirmation of TCD within the natural range of black walnut was made in Tennessee in July 2010. TCD was confirmed in Virginia and Pennsylvania in 2011, and in North Carolina and Ohio in 2013. TCD has not been found in Wisconsin as of February, 2014.



Spores of a canker-causing fungus, *Geosmithia morbida*, are carried by the walnut twig beetle (*Pityophthorus juglandis*). The walnut twig beetle is native to Arizona, California and New Mexico, and has recently invaded nearby western states, Tennessee, Virginia and Pennsylvania. The fungus creates numerous small cankers beneath the bark. An infested tree often dies within three years once symptoms develop.



Photo 1. Walnut leaves with many leaflets (above). Photo 2. Light brown chambered pith on twigs (below)

Walnut trees have compound leaves with 15-23 narrow leaflets with pointed tip (Photo 1). Twigs have light brown chambered pith (Photo 2). Black walnut grows mainly in southern Wisconsin as a component of hardwood cover types and in plantations. It is highly valued for the quality of wood as well as an important food source for wildlife and people. Black walnut is also found in urban landscape.

The potential damage of this disease to Wisconsin's forest resources could be great, due to the value of the wood, susceptibility of the species to the disease, and the ability for the beetle and the pathogen to survive in the climate in Wisconsin.

## What to Look For -----

### Yellowing/wilting in the crown in late June to late August

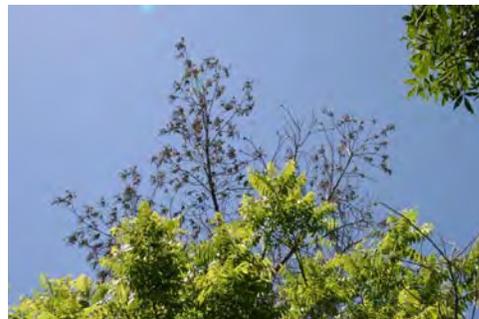


Photo 3 & 4 Yellowing and wilting leaves

Leaves may look smaller than normal. Crown symptoms could occur anywhere. However, they may appear more commonly first in the upper crown, on the south and west sides of the tree.

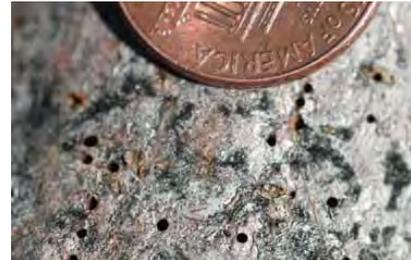
## What to Look For -----

### □ Branch mortality/Crown dieback



Photo 5 & 6 trees that are showing severe crown dieback

### □ Numerous tiny, pin-sized holes on branches larger than one inch in diameter (Photo 7)



Rapidly progressing dieback in the crown in a few weeks

### □ Meandering tunnels and galleries (Photo 8)



### □ Tiny reddish-brown bark beetles (1/16" long) (Photo 9)



### □ Numerous small cankers (dark dead areas) just beneath the bark (Photo 10)



Carefully peel away the outer bark of the branch/trunk exhibiting tiny holes using a sturdy knife to reveal meandering galleries and/or cankers. Note that the cankers develop just beneath the outer bark and can be missed if peeled too deep. As multiple cankers coalesce, they create large dead areas.

## Some problems that may look similar to symptoms of TCD, but NOT TCD

(Close field observation will distinguish these problems from TCD. Problems that may not be easily distinguished in the field are not included here.)

- ☑ Broken branches from storms
- ☑ Anthracnose (fungal leaf disease)

- ☑ Hail Damage
- ☑ Nectria canker

- ☑ Acrobasis shoot borer



Photo 11 Anthracnose on walnut leaves  
ID Key: Black blotches on infected leaves



Photo 12 Nectria canker on walnut  
ID Key: Target-shaped canker



Photo 13 Damage by Acrobasis shoot borer on a twig  
ID Key: Hollowed-out twigs with holes