

Information Item: Discussion of the discovery of *Thousand Cankers Disease* in a Black Walnut stand in Indiana prompting quarantine of the area through emergency order; Administrative Cause No. 14-080E

Thousand Cankers Disease of Black Walnut
Indiana Situation May 2014

The Division of Entomology & Plant Pathology proposes the emergency order to address the recent detection Thousand Cankers Disease of Black Walnut in Indiana. The presentation provides information on the disease, Indiana's situation, impacts and recommendations in addition to the emergency order.

BACKGROUND

Thousand Cankers Disease of Black Walnut (TCD) is a disease complex that involves the Walnut Twig Beetle (WTB) (*Pityophthorus juglandis*) and the canker fungus *Geosmithia morbida*

TCD was first detected and described in 2008 in Colorado, but was likely present since 2003,

TCD is present in western states – Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Washington, and Utah

Since 2010, TCD has been detected in Tennessee, Virginia, Pennsylvania, North Carolina, Ohio and Maryland.

TCD has multi county occurrence in Tennessee and Virginia. In Pennsylvania, North Carolina, Ohio and Maryland, TCD has been detected in only one county per state.

All states except Maryland and North Carolina have detected WTB and *Geosmithia morbida* in black walnut trees.

Maryland has only detected WTB from traps and not detected WTB and *Geosmithia morbida* from black walnut trees.

North Carolina has only detected *Geosmithia morbida* from a black walnut tree and has not detected WTB in traps or black walnut trees..

BIOLOGY

All *Juglans* spp. are susceptible to TCD. However, Black Walnut, *Juglans nigra*, is the primary species of concern for disease impact.

WTB attacks branches of *Juglans* spp. creating small holes and tunnels. They carry *Geosmithia morbida* spores on their body which infect the inner bark creating dead areas called cankers.

WTB makes many attacks creating many infection points for *Geosmithia morbida*.

These cankers coalesce and block the tree from moving nutrients, which leads to dieback, decline and mortality.

Current scientific understanding is that the presence of WTB and *Geosmithia morbida* is necessary to create mortality and spread the pest complex

WTB adults emerge throughout the year with peak periods in the spring (March, April, May) and again in the fall (September, October).

Disease symptoms are yellowing foliage, wilted brown foliage, branch dieback and epicormic sprouting, followed by decline and death within 3-5 years. Foliage symptoms are evident in late July through early September.

Disease transmission is through natural spread of WTB or artificial spread by man through movement of infected/infested walnut logs, burls, crotches, lumber, branches, and firewood.

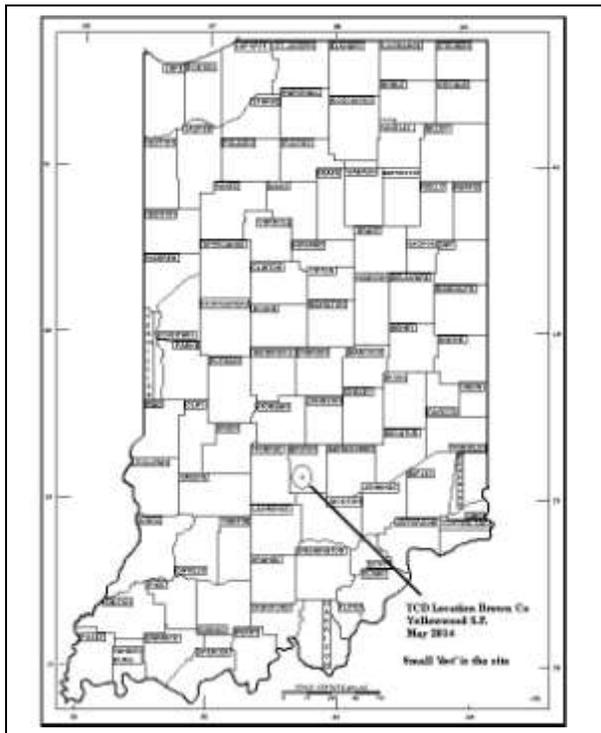
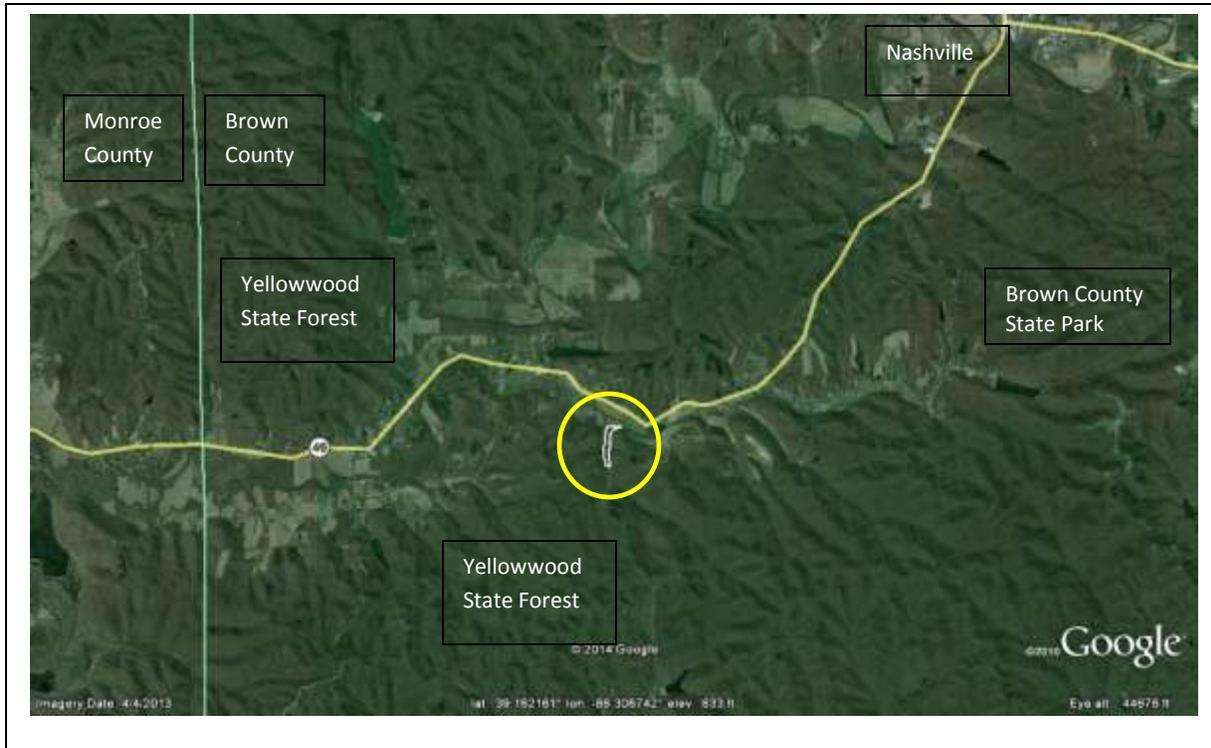
REGULATIONS – EXTERNAL QUARANTINES

States with quarantines against TCD – Arkansas, Illinois, Indiana, Kansas, Minnesota, Missouri, Nebraska, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Virginia, West Virginia, Wisconsin



INDIANA SITUATION

Geosmithia morbida detected on a new insect host – *Stenomimus pallidus* – a weevil that was collected from a black walnut tree in a black walnut plantation on Yellowwood State Forest.



USDA Forest Service conducted a study to determine which insects come to and attack stressed black walnut.

Study conducted in 2011 in Indiana and Missouri.

15 study sites in Indiana – 12 study sites captured *Stenomimus pallidus*.

Only the Brown County site has *Stenomimus pallidus* positive for *Geosmithia morbida*. All other sites with *Stenomimus pallidus* tested negative by culture and molecular analysis.

3 of 19 weevils in Brown County site tested positive for *Geosmithia morbida* by culture and molecular analysis.

The *Geosmithia morbida* cultures were

identified by Jenny Juzwik, USFS Forest Pathologist, and confirmed by Ned Tisserat, Pathologist who first identified *Geosmithia morbida*. Molecular analysis was also confirmed twice.

The weevils were identified by Dr. Sharon Reed, University of Missouri, and confirmed by USDA APHIS PPQ Identifier, Bobbie Brown, Purdue University.

Also tested two ambrosia beetles – *Xylosandrus crassiusculus* and *Xylosandrus germanus* – for *Geosmithia morbida* that were collected at the Brown County site and results were negative.

No WTB were detected in Indiana or Missouri, and surveys by Division of Entomology have not detected WTB in extensive state wide surveys.

The walnut plantation was established in 1973 and 1975 and has not been managed. It is approximately 10 acres. Trees in the stand are young pole sized (6-10” DBH, 30-40 Ft). The trees show no decline or dieback symptoms during winter survey of the trees.

SUMMARY

Geosmithia morbida has been detected and confirmed from a new insect, *Stenomimus pallidus*, that was collected from walnut study trees in a 40 year old black walnut plantation on Yellowwood State Forest in Brown County.

WTB has not been detected in the plantation or in Indiana.

Stenomimus pallidus is a native weevil that attacks wounded areas on branches and stems of walnut, oaks and hickory.

The detection of an additional carrier of *Geosmithia morbida* creates questions for the understanding of *Geosmithia morbida* and its role in the death of black walnut trees.

MANAGEMENT FOR INDIANA

Regulation – Indiana

Options:

1. Do nothing
2. Cut and destroy all black walnut trees in the plantation
3. Quarantine just the 10 acre black walnut plantation
4. Quarantine part of Brown County that would include the plantation. This area would be defined as west of Hwy 135 and south of Hwy 46 to Jackson and Monroe county border with Brown County
5. Quarantine all of Brown County.

Recommendation – quarantine only the 10 acre black walnut plantation on Yellowwood State Forest and do not quarantine the rest of or all of Brown County.

Rationale for this recommendation:

1. Only state owned land is impacted. Private, industrial and federal land is not impacted by this quarantine. North side and northeast corner of the plantation is private land. All

other land around the plantation is Yellowwood State Forest. This keeps the infestation isolated and ensures that the pest is not able to be moved or exposed to the surrounding area.

2. Allows for survey in and around the plantation to determine if there are other infested/infected black walnut in the plantation and the surrounding area.
3. Allows for a repeat of the 2011 study of girdled black walnut to see if *Stenomimus pallidus*, WTB and other beetles are captured and then test for *Geosmithia morbida*
4. Allows for inoculation studies using the *Geosmithia morbida* fungus isolated from the weevil in the plantation to better understand the disease complex.
5. Still have the option to cut and destroy all black walnut in the plantation at any time.

Regulation – by other states

1. All states with an external TCD quarantine will add Indiana to their list of regulated states.

IMPACT OF REGULATION BY INDIANA AND OTHER STATES

1. Movement of walnut logs and lumber from an Indiana origin woodlot or mill to another state destination will need certification that the logs and lumber do not have TCD and do not come from the quarantined area in Brown County. This will increase workload for Division of Entomology Inspectors.
2. A state may not allow walnut from Indiana into their state. Missouri is the most likely to not allow Indiana walnut into their state.
3. Indiana will still maintain its external TCD quarantine and not remove the requirements to bring walnut logs and lumber from a TCD state into Indiana.
4. Walnut logs and green lumber with bark will create the most concern and risk for other states.
5. Heat treatment (Kiln Dry) and fumigation are options to treat lumber and logs, respectively for movement out of Indiana to another state.
6. Movement of walnut logs and lumber in international trade should not be impacted as current requirements of destination countries will provide the required level of protection. There may be additional countries adding TCD to their list of pests to address, but not aware of any at this time.

INDIANA DEPARTMENT OF NATURAL RESOURCES

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June 20, 2014

DETERMINATION for
THOUSAND CANKER DISEASE EMERGENCY ORDER

RE: 312 IAC 18-3-24(c)(4)

I determine that the States of Indiana as limited to the following coordinates within Brown County – Lat./Long. 39.1548/-86.3092; 39.15/-86.3083; 39.1465/-86.3107; 39.1445/-86.3101; 39.145/-86.3091; 39.148/-86.3076; 39.1527/-86.3075; 39.1547/-86.306, Maryland, North Carolina, and Ohio have thousand cankers disease and are subject to the Thousand Canker Disease Rule 312 IAC 18-3-24 effective this date.

North Carolina detected Thousand Canker Disease in December 2012 and approved the change to their quarantine January 3, 2013. See http://cnr.ncsu.edu/blogs/wou/files/2013/01/TCD-Quarantine-updated-2013_01_03.pdf

Ohio detected Thousand Canker Disease in May 2013 and approved the change to their quarantine December 19, 2013. See http://www.agri.ohio.gov/public_docs/news/2013/12.20.13%20Butler%20County%20TCD%20Quarantine.pdf

Maryland detected walnut twig beetle (*Pityophthorus juglandis*) on a trap in the fall of 2013. The presence of the beetle without the fungus was declared in January 2014. Maryland does not intend to create a state level quarantine.

Indiana detected the fungus *Geosmithia morbid* sp. nov on *Stenomimus pallidus* in the following coordinates within Brown County on December 2013 and is moving to adjust the current quarantine to include this area and the weevil that the fungus was found on. Coordinates - Lat./Long. 39.1548/-86.3092; 39.15/-86.3083; 39.1465/-86.3107; 39.1445/-86.3101; 39.145/-86.3091; 39.148/-86.3076; 39.1527/-86.3075; 39.1547/-86.306.

A handwritten signature in blue ink that reads "Philip T. Marshall".

Philip T. Marshall
State Entomologist