

# Thousand Cankers Disease: An emerging walnut disease

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## Contributors

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## Urban and Suburban Plantings



Photo: Cranshaw and Tisserat  
Pest Alert



Photo: Fichtner

California Commercial Walnut Production



Photo: Cranshaw and Tisserat  
Pest Alert

## HISTORY

2001-present: widespread mortality of black walnut (*Juglans nigra*) in western United States

June 2008: First disease report in California—Yolo County

2009: Many reports of disease throughout California

### Counties with confirmed disease:

Alameda, Los Angeles, San Benito, San Joaquin, San Luis Obispo, Solano, Sutter, Tulare, Yolo

### Species affected:

*J. nigra*.....Eastern Black Walnut

*J. hindsii*.....Northern California Black

*J. regia*.....English Walnut

*J. nigra* x *J. hindsii*

*J. hindsii* x *J. regia*

## Thousand Cankers Disease Complex



### **SYMPTOMS**

**Yellowing, thinning,  
flagging**

**Numerous discolored  
cankers**

**Small holes in canker**







Walnut Twig Beetle  
(*Pityophthorus juglandis*)

**Causal Agent: *Geosmithia sp.***  
**Proposed species name: *G. morbida***

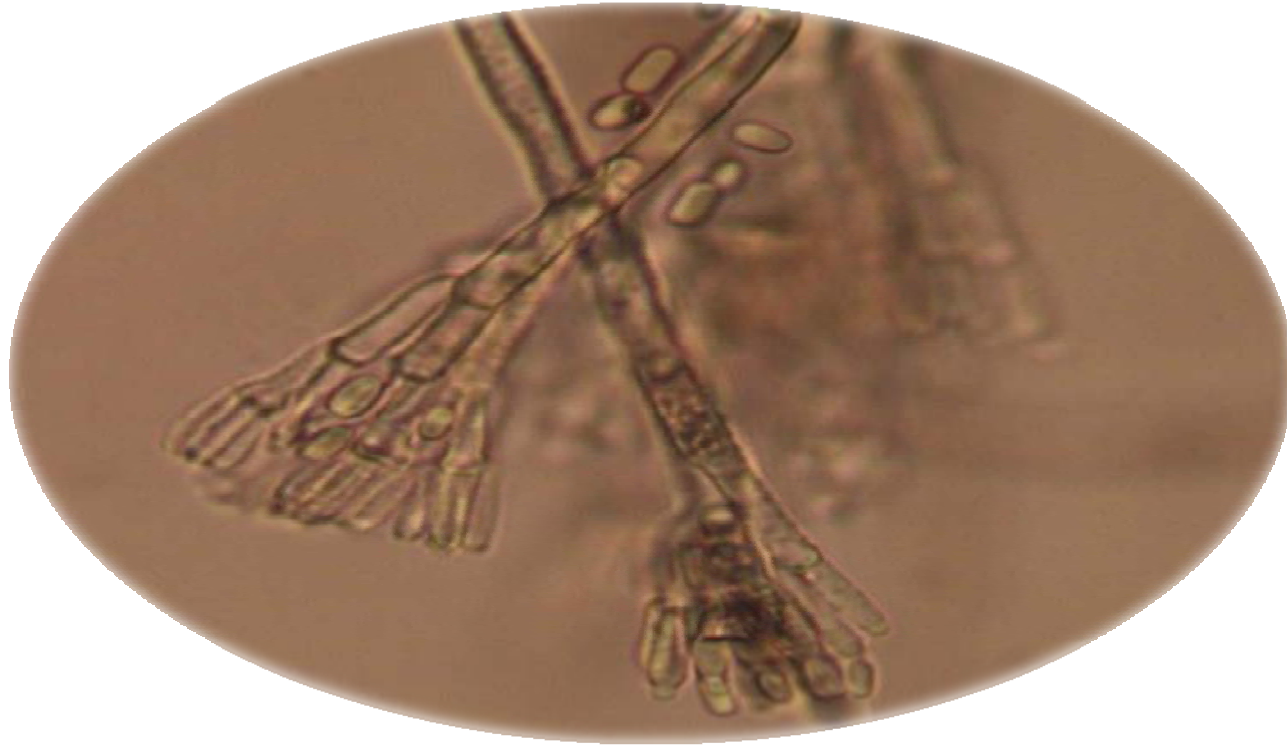


PHOTO. JIM LABOITE

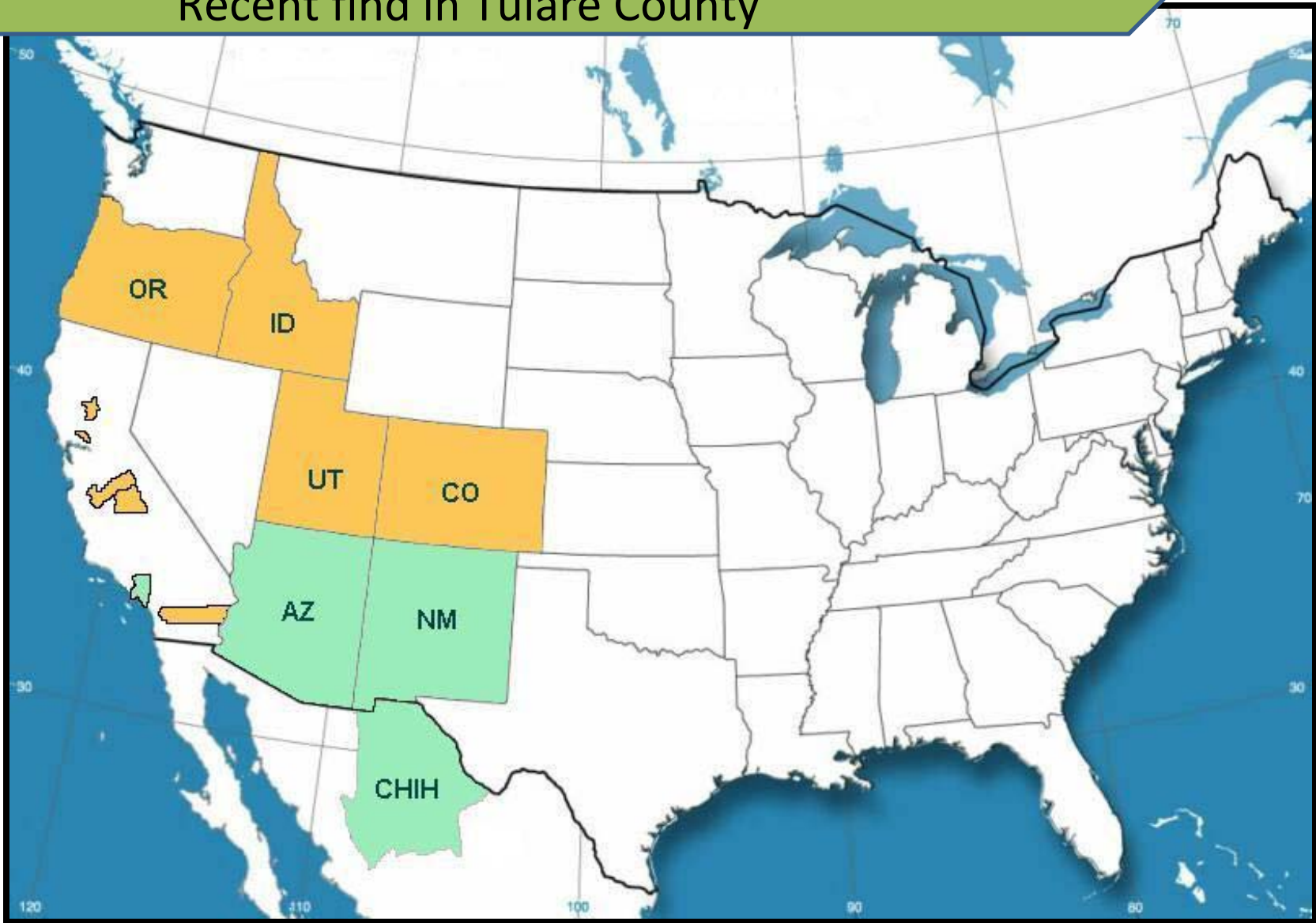
**Vector: Walnut twig beetle**

- Aggressive feeder
- Introduces fungus during gallery formation
- Fungus sporulates in gallery
- Aggregation pheromone

## Walnut Twig Beetle Distribution

Presumably native

Recent find in Tulare County



Map: Cranshaw and Tisserat; Pest Alert

# Incidence of Thousand Cankers on English Walnut

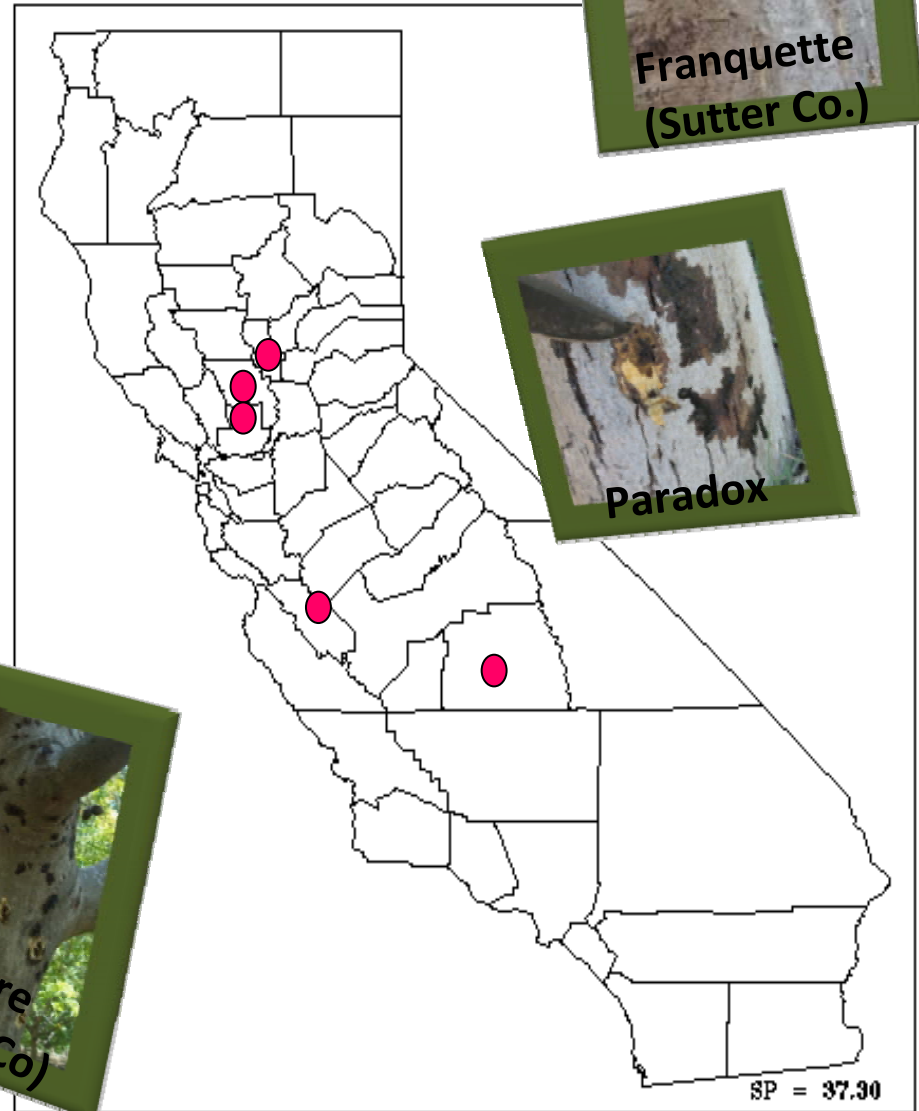


**Black Walnut (*J. nigra*)**  
**High disease incidence and severity**

## Disease confirmed on English Walnut in CA

- Sutter Co.– 2
- Solano Co.- 3
- Yolo Co. - 1
- Tulare Co. – 1
- San Benito Co. - 1

**Tulare County: Thousand Cankers was NOT primary cause of death**



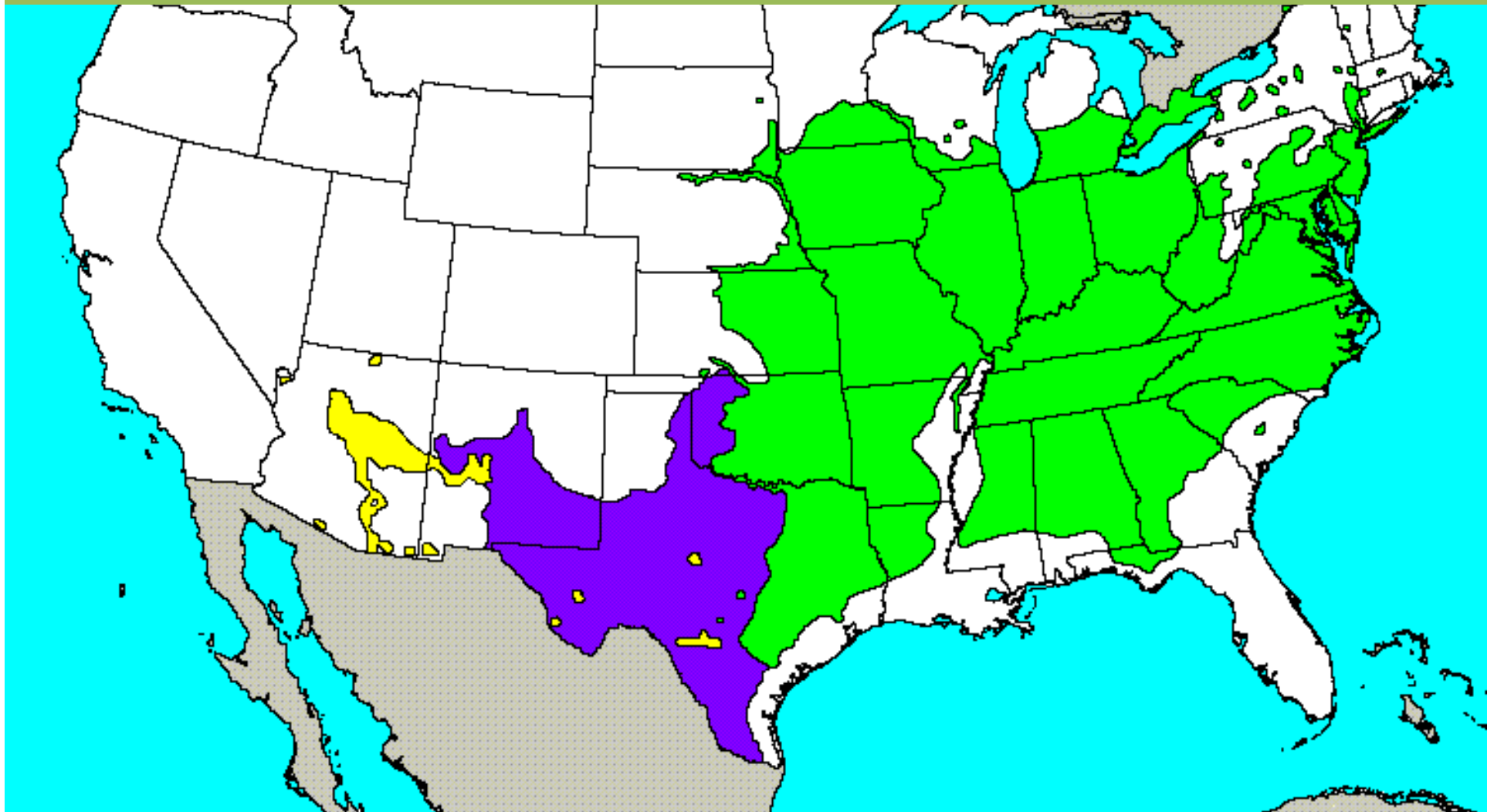
Franquette  
(Sutter Co.)

Paradox

Tulare  
(Tulare Co)

SP = 37.30

## Risk of Thousand Cankers Disease in Native Range of *Juglans nigra*



Arizona walnut  
*Juglans major*

little walnut  
*Juglans microcarpa*

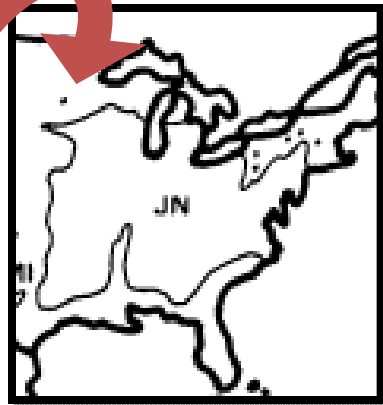
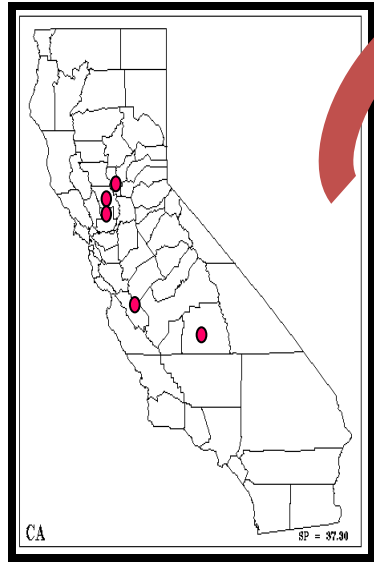
black walnut  
*Juglans nigra*

Map: [denvergov.org](http://denvergov.org)

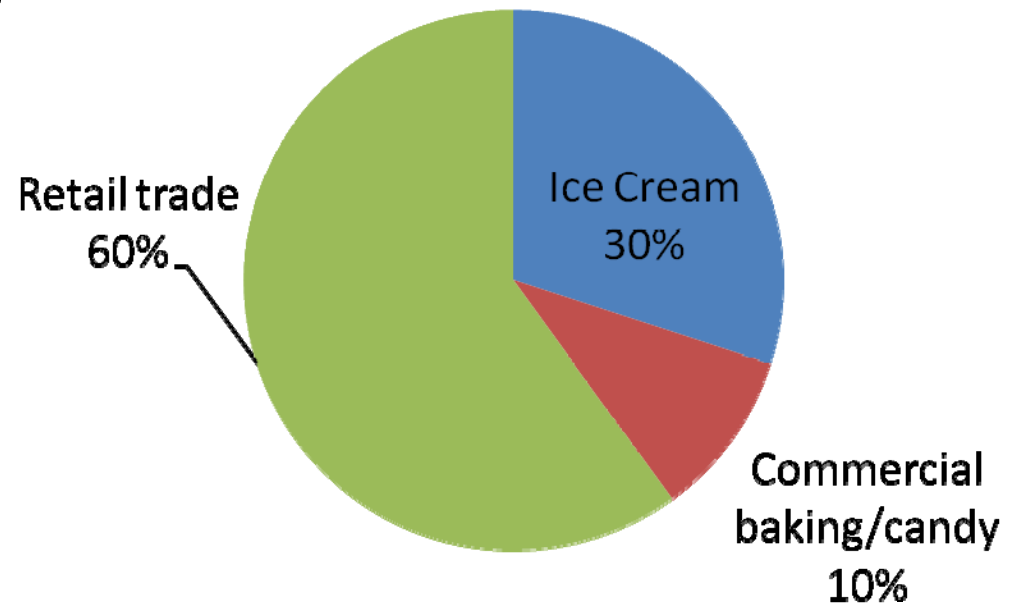


- 10,000 metric tons of black walnuts harvested annually
- High value native wood (furniture, gunstocks)
- food for wildlife; ecosystem component

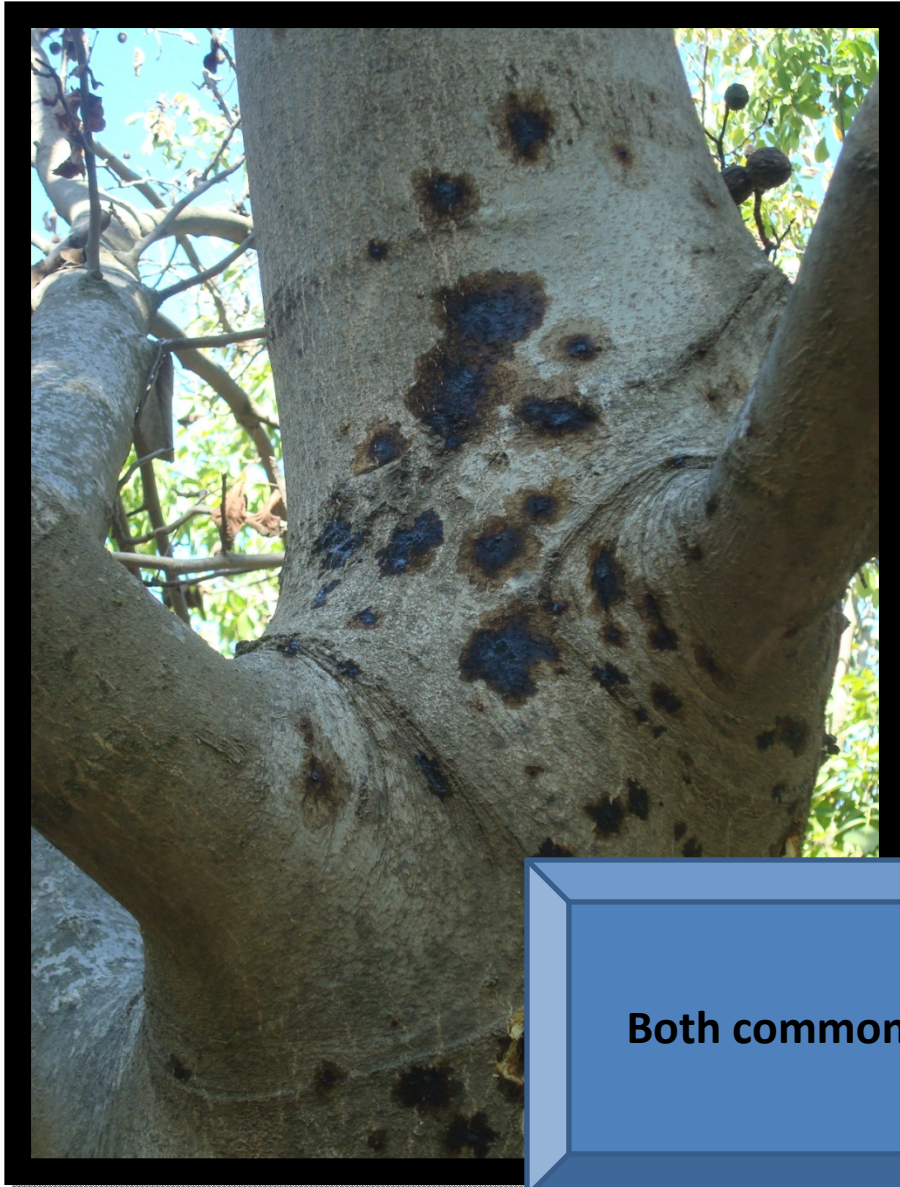
## Protection of native *J. nigra*



## Black Walnut



## Thousand Cankers Disease (*Geosmithia* sp)



## Shallow Bark Canker (*Brennaria* sp)



**Both common on stressed trees**

## Thousand Cankers Disease (*Geosmithia* sp)



## Shallow Bark Canker (*Brennaria* sp)



Don't ignore shallow bark canker symptoms  
Look for beetle galleries!



Distribution, disease incidence, and impact: unknown

# Summary of Thousand Cankers in CA



Species	Urban	Riparian/Native	Ag
<i>J. nigra</i>	X		
<i>J. hindsii</i>	X	X	X
<i>J. hindsii</i> x <i>J. nigra</i>			X
<i>J. regia</i>			X
<i>J. californica</i>	X	X	
Paradox rootstock	X		X

Summarized by Janine Hasey

# Walnut Species Used In Agriculture

## Commercial Nut Production

English walnut (*Juglans regia*)

243,000 acres in CA in 2007

~ 100% of U.S. production in CA

## Nursery rootstock seed trees – Black walnut

*J. hindsii*, *J. hindsii* x *J. nigra* hybrid

## Rootstocks – both from Black walnut sources

Northern CA black  
Seedling Paradox hybrid (more vigor)



*Juglans regia* L.

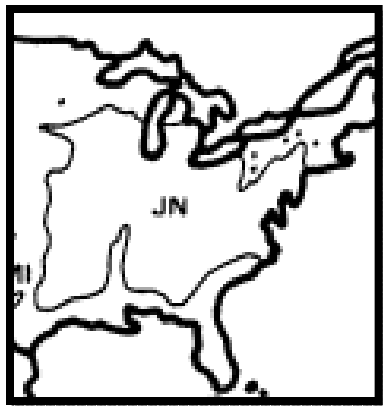
Image processed by Thomas Schoepke  
[www.plant-pictures.de](http://www.plant-pictures.de)

# SUMMARY



## 1) Identify

- Look for cankers associated with small insect holes.
- Disease may be readily observed on Black Walnut (susceptible)
  - \*Suckers from rootstock may be more susceptible than English walnut scion
- Call Farm Advisor for sampling and disease confirmation.



## 2) Prevent Spread

- Reduce risk of pathogen and insect transmission to native range of *Juglans nigra*.

# More Info at UCD IPM Website

<http://www.ipm.ucdavis.edu/EXOTIC/thousandcankers.html>

Thousand Cankers Disease of Walnuts: A New Disease in California—UC IPM - Windows Internet Explorer

http://www.ipm.ucdavis.edu/EXOTIC/thousandcankers.html

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## Thousand Cankers Disease of Walnuts: A New Disease in California.

[Walnut pest management guidelines](#)

Thousand cankers disease (TCD), caused by a newly described fungus in the genus *Geosmithia*, is killing black walnut trees in California posing a threat to wildland and landscape trees as well as to the commercial walnut industry. The fungus is spread by a tiny bark beetle, the walnut twig beetle (WTB), *Pityophthorus juglandis* (Figure 1). The fungus enters the tree through the feeding or reproductive activities of the beetle and colonizes and kills the phloem and cambium of the branches and main stem.




Figure 1. Walnut twig beetles are tiny, about 1.5 mm in length. Photo by L.L. Strand.

WTB is believed to be native to Arizona, California, Mexico, and New Mexico, where it attacks various indigenous western black walnut tree species. Although previously not considered a pest, WTB's apparent new association with the *Geosmithia* fungus, now makes it a pest of significant concern.

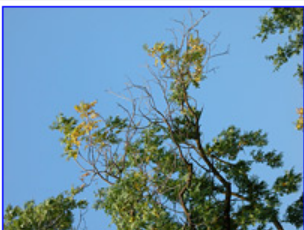


Figure 2. Flagging and branch dieback. Photo by S.J. Seybold.

TCD was first recorded in northern California in Davis in June 2008; however, it was probably in the state for several years prior to 2008. The

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# ACKNOWLEDGEMENTS

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Several Walnut Growers in Tulare County



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