

# White Pine Weevil





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UGA2185016





# White Pine Weevil Control Tips

- Attacks white pines, spruces
- More common in pure plantings
- Adults emerge in early spring when  $T > 50\text{ F}$  (as early as March in PA),
- Treat in early spring when adults emerge with borer pesticide
- Mechanically remove Shepard's Crooks before August 1.

# Pales weevil



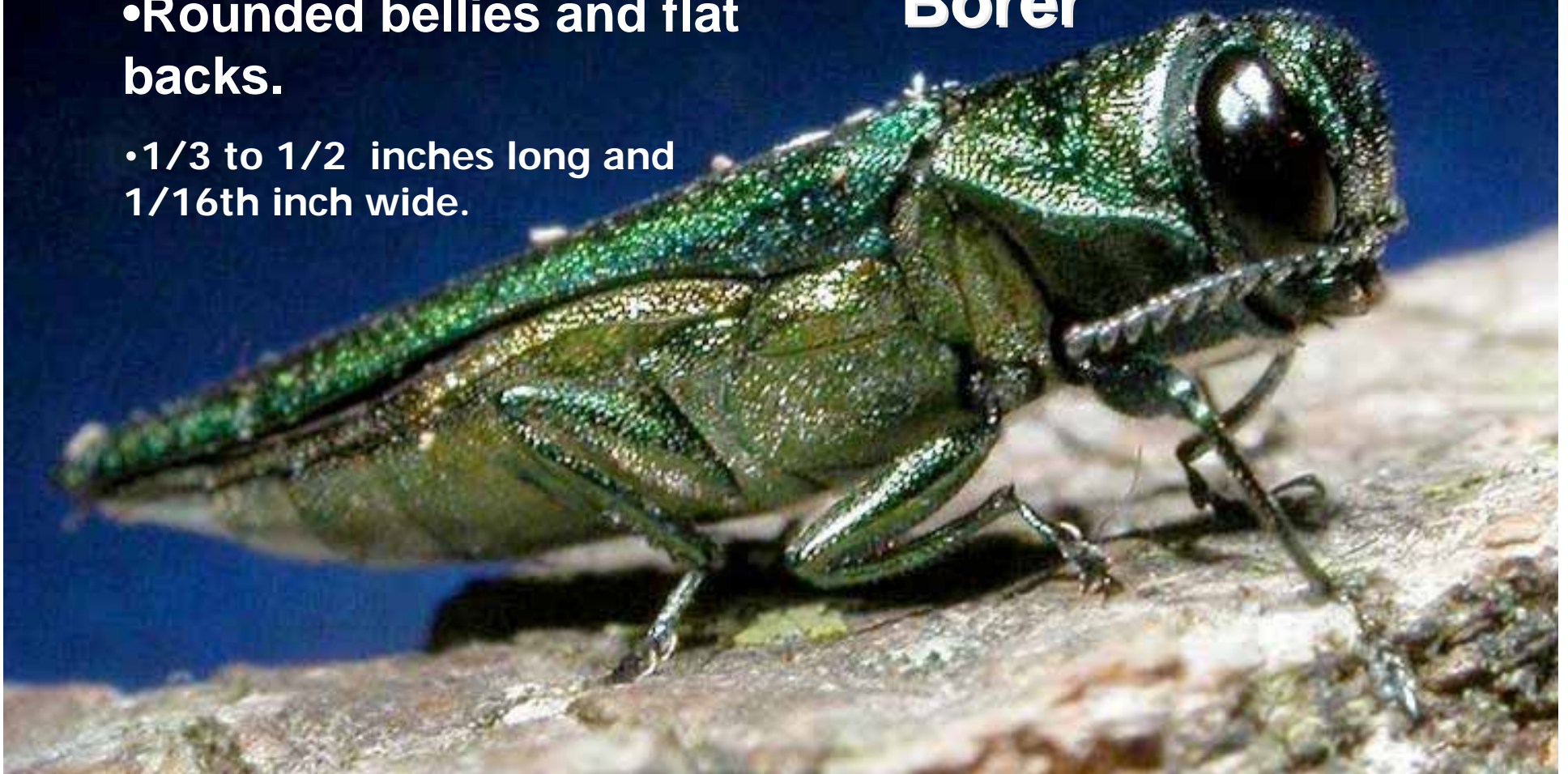






- Bright metallic green.
- Rounded bellies and flat backs.
- 1/3 to 1/2 inches long and 1/16th inch wide.

## **Emerald Ash Borer**



**Their peculiar shape accounts for the distinctive 'D'-shaped exit holes from which they emerge from trees.**



## Cooperative Emerald Ash Borer Project

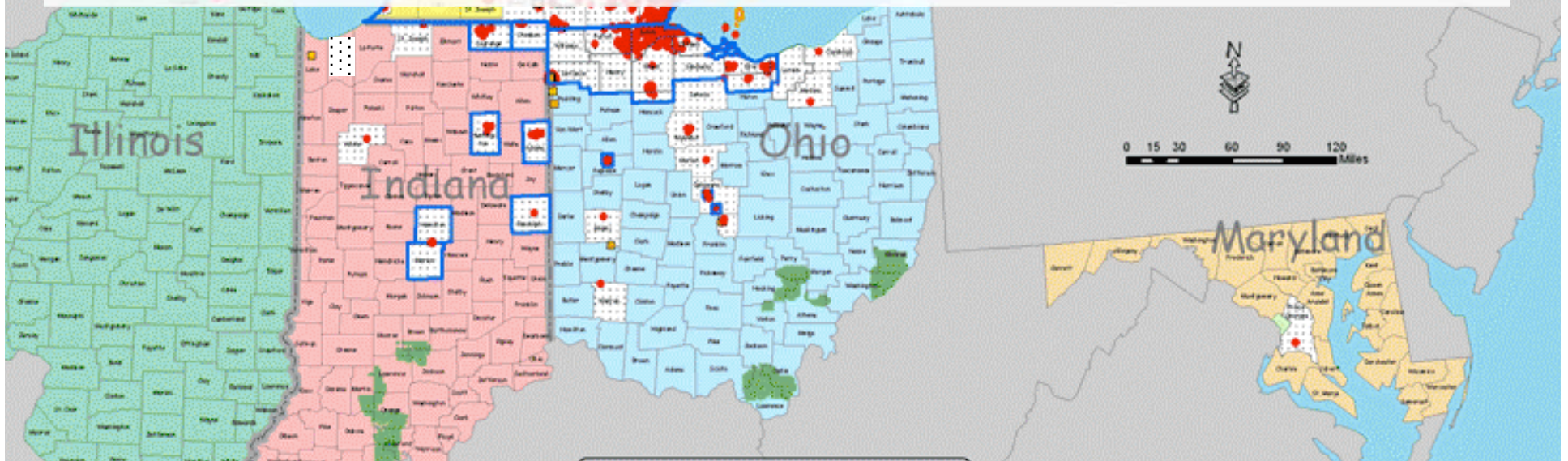
EAB locations  
in Illinois, Indiana, Michigan, Maryland,  
Ohio and southwest Ontario, Canada

October 11, 2006

**The areas infested with EAB have exceeded 40,000 square miles in Michigan, Indiana, Ohio, and Ontario, Canada.**

For the latest version of this map, visit:

[www.entm.purdue.edu/EAB/images/maps/fullSize/nationalMap.gif](http://www.entm.purdue.edu/EAB/images/maps/fullSize/nationalMap.gif)







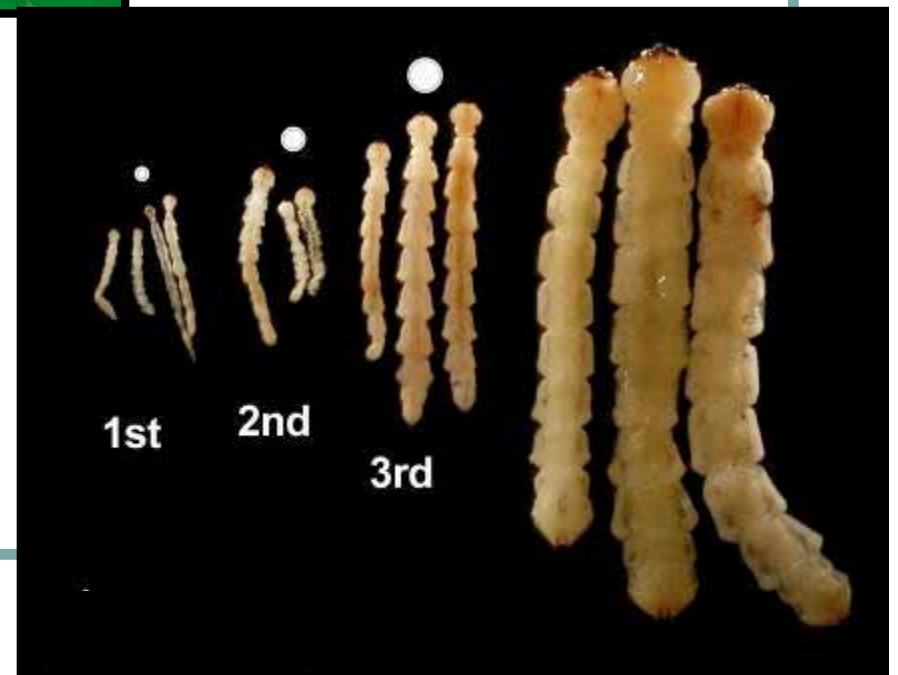




## Larval Characteristics

Larvae are creamy white with flat, broad-shaped bodies. Body segments are bell-shaped.

Mature larvae are about 1 inch long.







**Larvae (pre-pupal form) spend  
winter under bark.**



## Deadly cycle

The emerald ash borer beetle lives only three to four weeks. Here's a look at the life cycle:

- 1 From May to September, beetles mate and the female lays 60-90 eggs, one at a time, in crevices all over the bark of healthy ash trees.

### Eggs



1/25 of an inch long

- 2 Eggs hatch as larvae, which tunnel through bark and into tree's cambial tissue. In winter, the larvae zig zag while feeding on cambial tissue that disrupts the tree's vascular tissue, eventually killing the tree.

### Larvae



Mature larvae are about an inch long

- 3 When warmer weather arrives (usually in April), larvae enter the pupal stage. They transform from larvae into sexually mature adults.

### Pupae



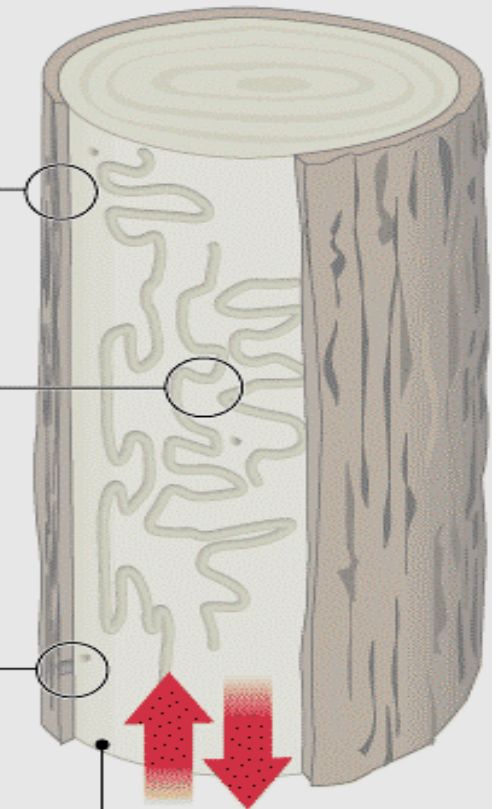
- 4 In mid to late May, the pupae turn into beetles and emerge through holes the larva left in the bark.

### Beetle



Adult beetles are 1/3 to 1/2 inches long.

Source: Dr. David L. Roberts, plant pathologist, Michigan State University



**Cambial tissue:**  
The transportation system that takes water, minerals, and nutrients throughout the tree.

- 5 The cycle begins again as male and females feed on leaves at the top of trees and begin mating and laying eggs for three to four weeks before dying.



Tim Summers / The Detroit News





# Chemical Control

- Imidacloprid





# Soil Injection





# Bronze Birch Borer Injury





# Bronze Birch Borer Injury





# Typical Zig-zag Galleries

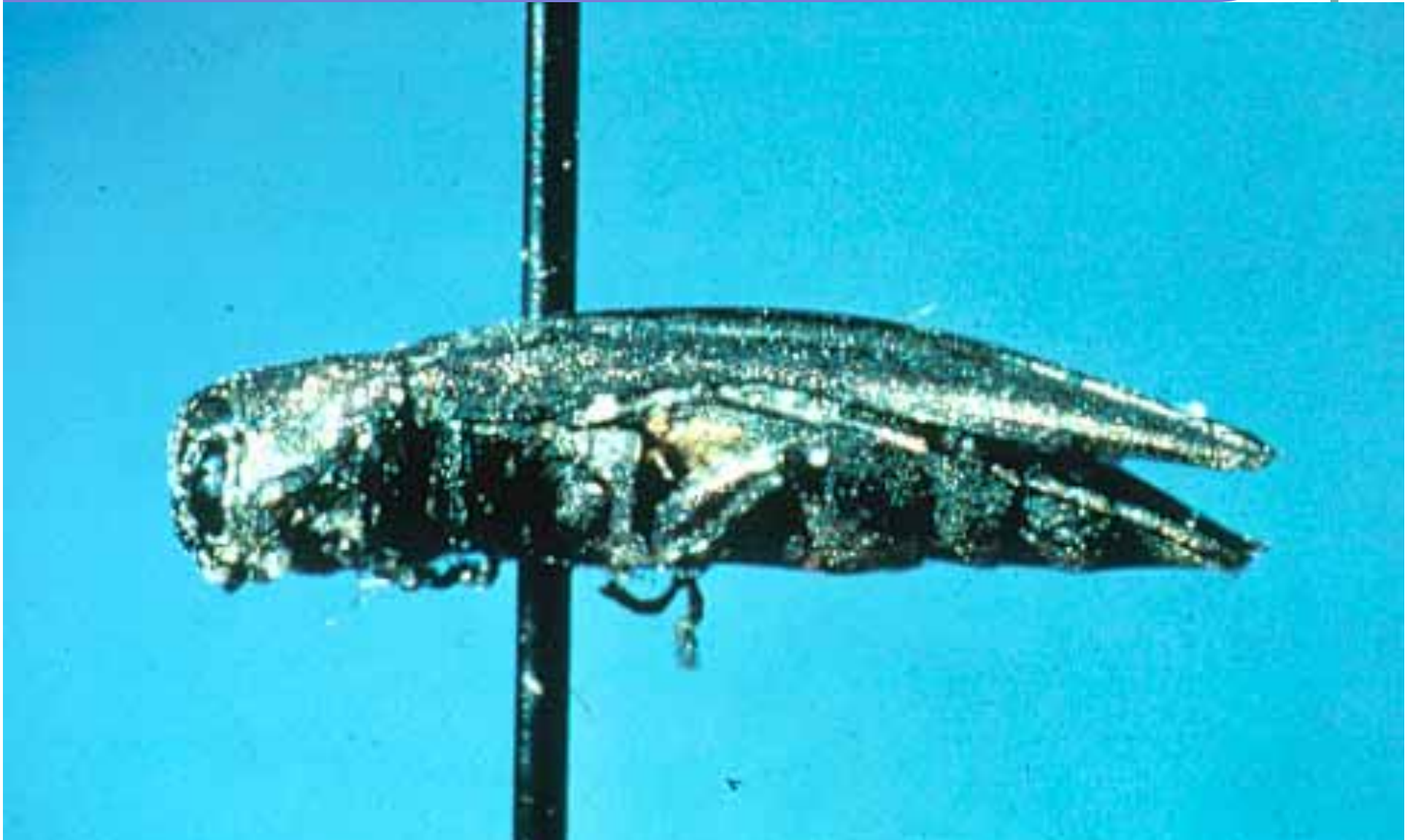




# Adult Bronze Birch Borer



# Side View Bronze Birch Borer





# Larva of a Flat-headed Borer



# Pear Killed by Flat-headed Apple Tree Borer





# Flat headed Apple Tree Borer





# Locust Borer



# Black Locust Borer Adult





# Larva of a Round Headed Borer



# Excelsior wood shavings

## Typical of longhorned beetles





# The Asian longhorned beetle





# ALB Life Cycle

**1. Egg Niche**



**2. Larva**



**3. Pupa**



**4. Emergence Hole**



**5. Adult**





# Symptoms of ALB Infestation



- **Large emergence holes on branches or the stem ( $>3/8''$  diam).**

- **Flagging & dieback in the canopy**



- **Sawdust accumulates at branch crotches or tree base.**

# Horntail Wasp – Pigeon Tremex

- Attack stressed trees
- Lumber problem



<http://insects.tamu.edu/fieldguide/cimg326.html>

B. Drees TAMU



# Asian Ambrosia Beetle

- New to Indiana
- Problematic in nurseries, can vector disease
- Wide variety of hosts, including nut and fruit trees
- Life cycle not well understood. Adults do not feed when making tunnels, so imidacloprid does not work. Fly 4 weeks in early spring and through summer. Pyrethroids may agitate and cause borers to back out.
- [http://creatures.ifas.ufl.edu/trees/asian\\_ambrosia\\_beetle.htm](http://creatures.ifas.ufl.edu/trees/asian_ambrosia_beetle.htm) View this link to University of Florida for more information

# Frass Tubes and Oozing Sap





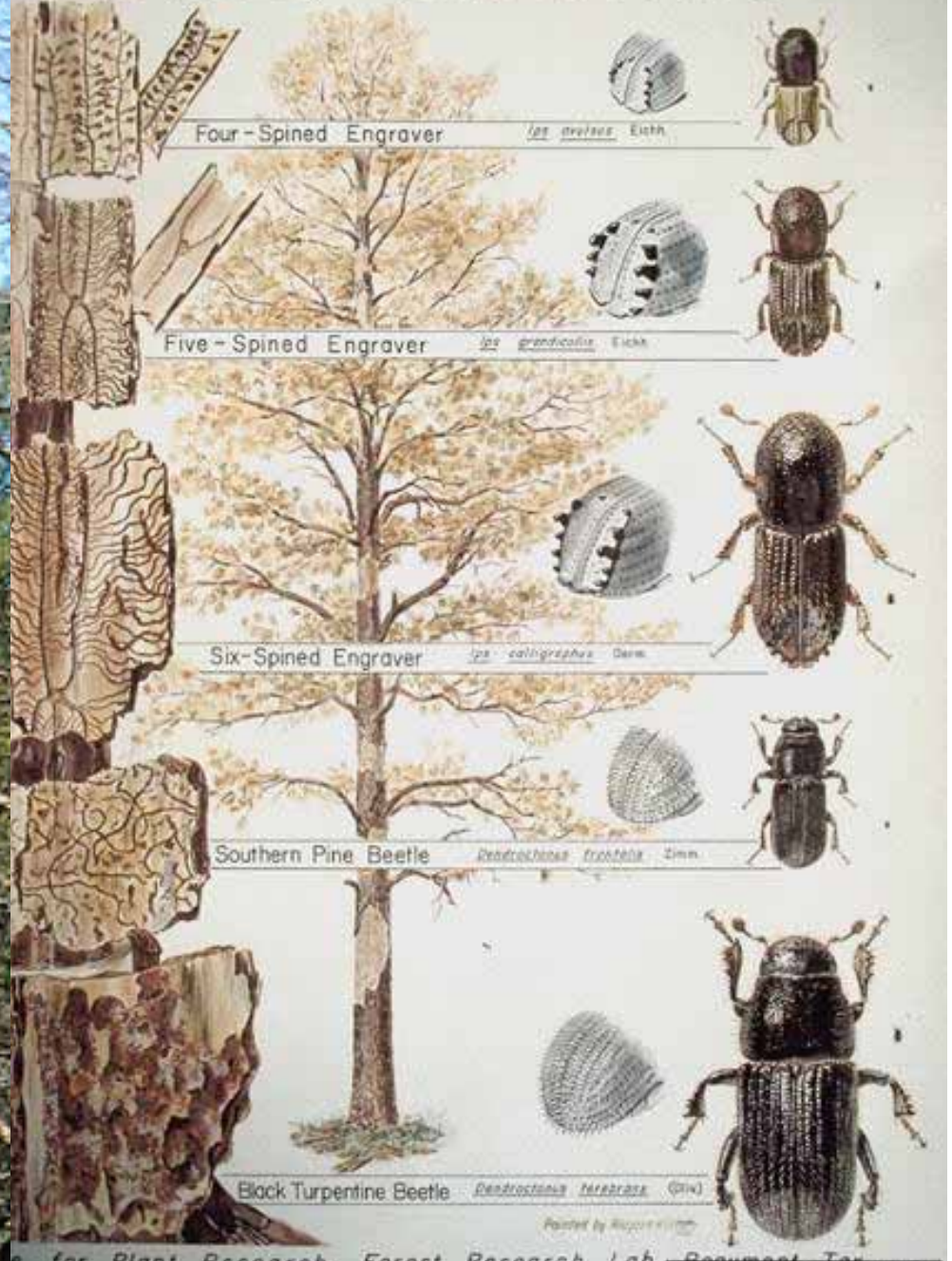
# Sapsucker Injury







# Bark Beetles





# Pine and Spruce Engraver Beetles



# Blue Staining Fungus





# Pine Sawyer Beetle Adult



# Pine Sawyer Larvae Damage





# Pine Sawyer Larva

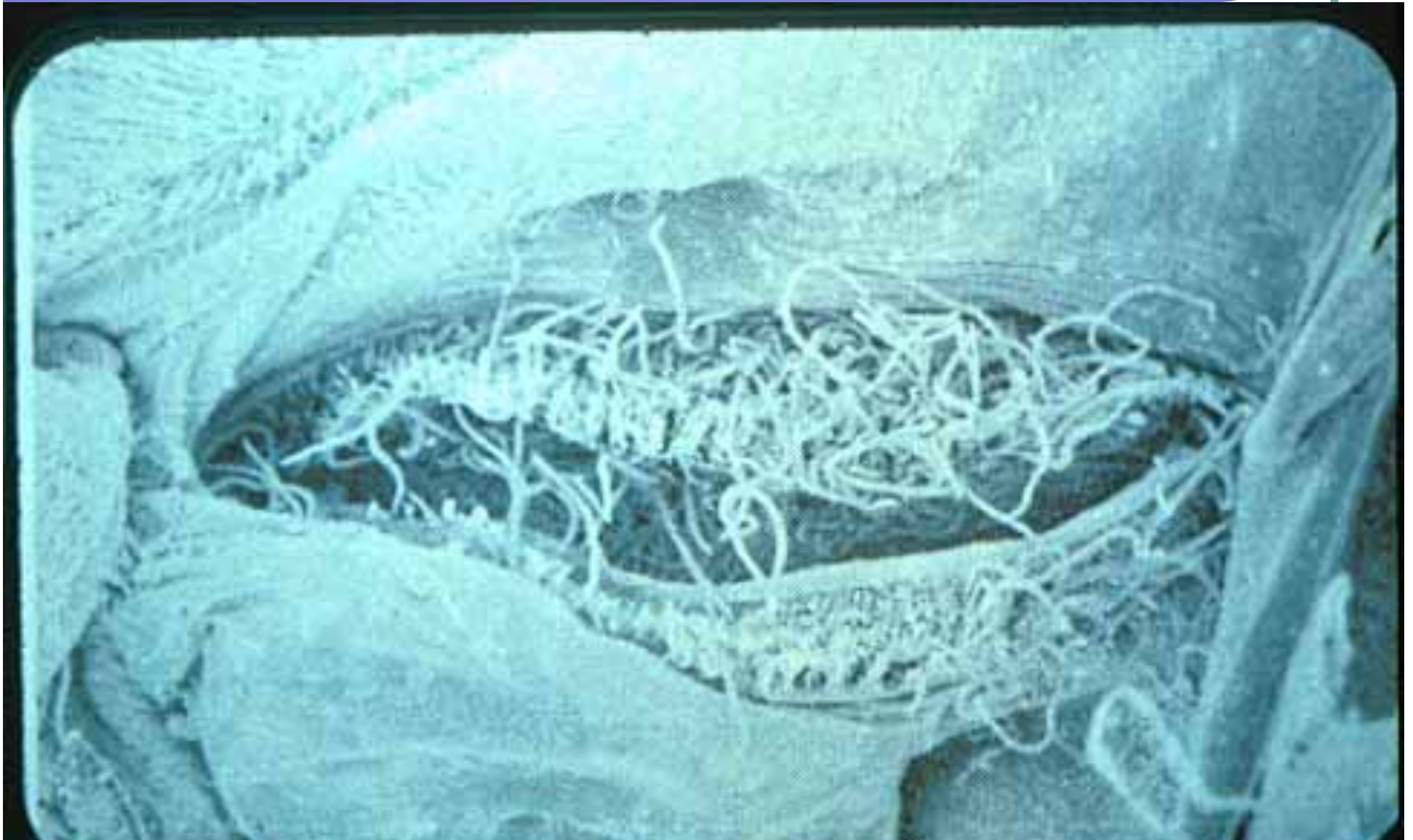


# Pupate in heartwood





# Nematodes Associated with Pine Wilt Disease



# Pine Sawyer Beetle Egg and Bark Beetle Exit Hole

Bark beetle  
exit hole

Pine sawyer  
Egg niche





# Dutch Elm Disease on American Elm



# European Elm Bark Beetle





# European Elm Bark Beetle Gallery

