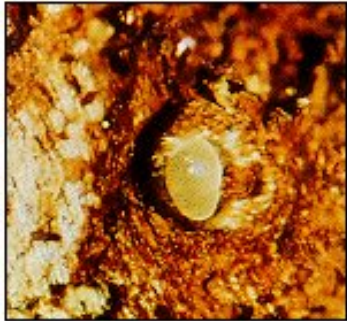


# Beetles and Borers

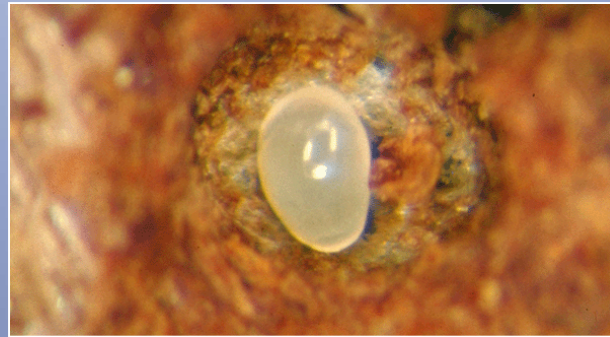
Laboratory #4

# Bark Beetle Pests

# Southern Pine Beetle



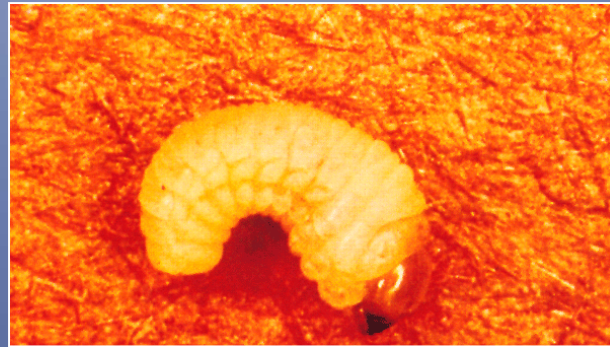
Egg



A



Larva



B



Pupa

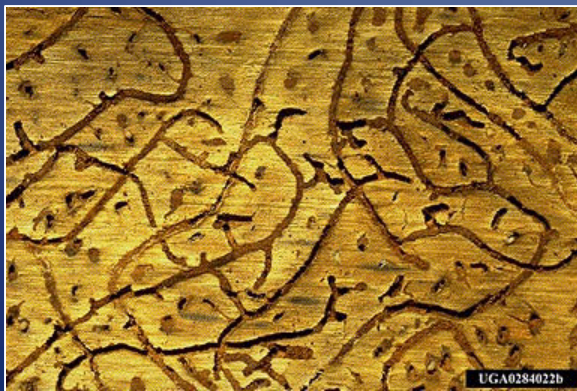
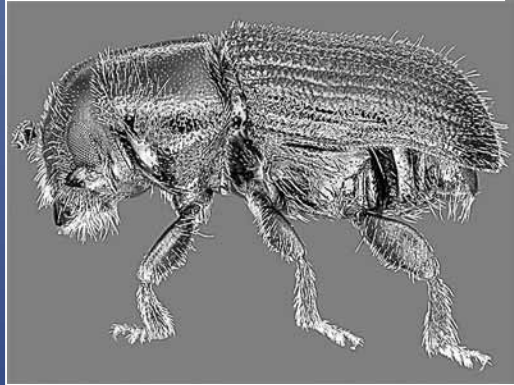
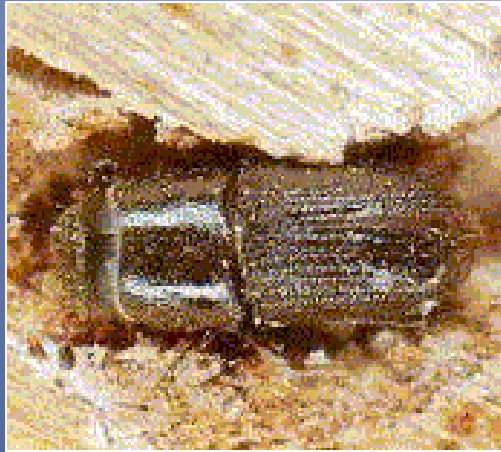


C



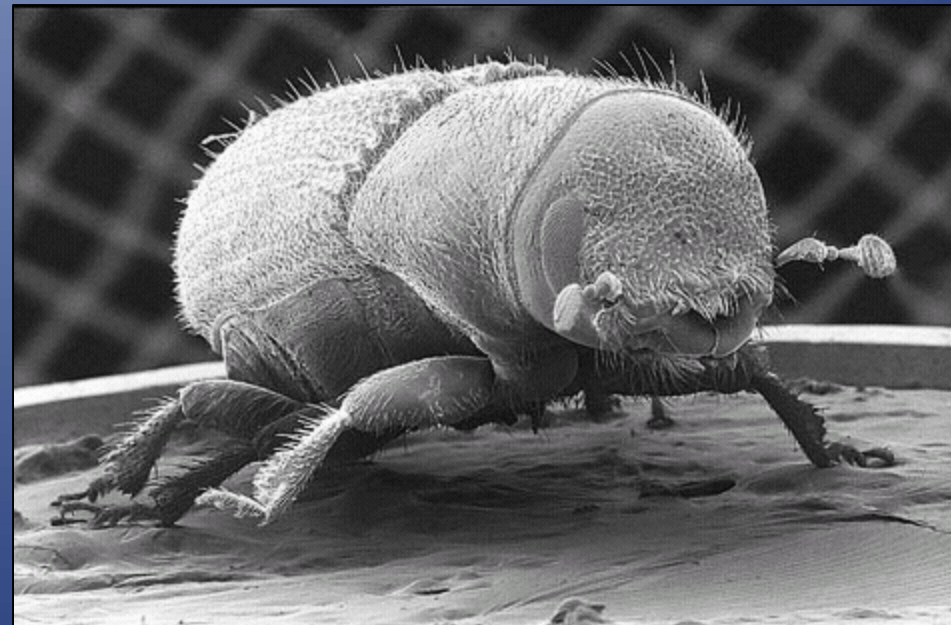
Adult

# Southern Pine Beetle-*Dendroctonus frontalis*



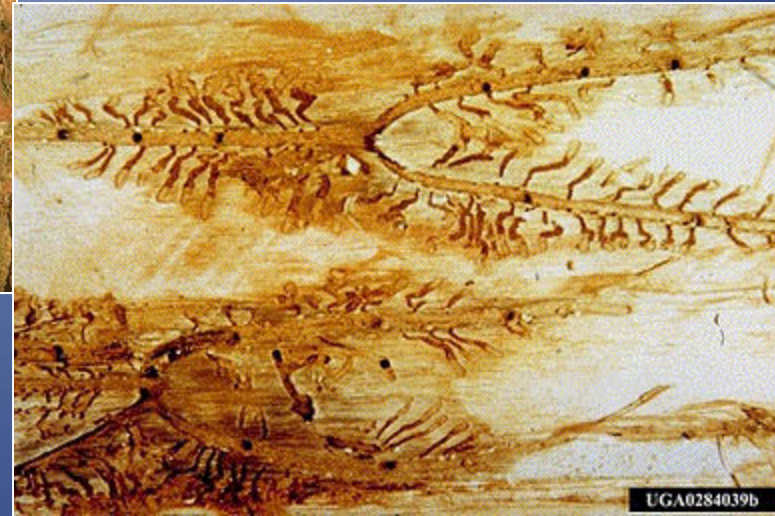
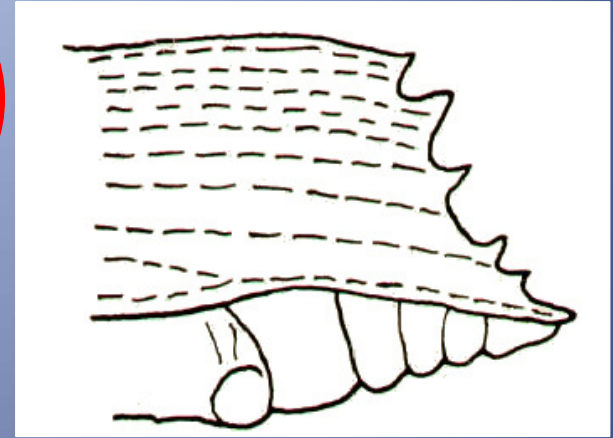
- Cylindrical in shape; elongated
- 2 to 4 mm in length
- Brownish to black in color
- Pitch tubes in crevices, the 1<sup>st</sup> sign of SPB attack
- Make S-shaped galleries in bark

# Mountain Pine Beetle



- straight, vertical, frass-filled galleries with a crook or "J" at the start.
- Mature adults are black and about 5 mm long.

# Ips Engraver Beetles



- Three main species in southeastern US
- Form Y-shaped galleries in bark
- Generally attack weakened or stress trees
- Characteristic: Rear end has a concave declivity; scooped out posterior

*Ips* Engraver Beetles  
*Ips avulsus* (4-spined)



- 2-3 mm in length
- Smallest of the three *Ips*
- 4 spines on each elytron (posterior covering of the forewings)

# *Ips* Engraver Beetles

## *Ips grandicollis* (5-spined)



- 3-4 mm in length
- Intermediate in size between the other two
- Five spines on each elytron



# *Ips* Engraver Beetles

## *Ips calligraphus* (6-spined)



- 4-6 mm in length
- Largest of the three types
- 6 spines on each elytron

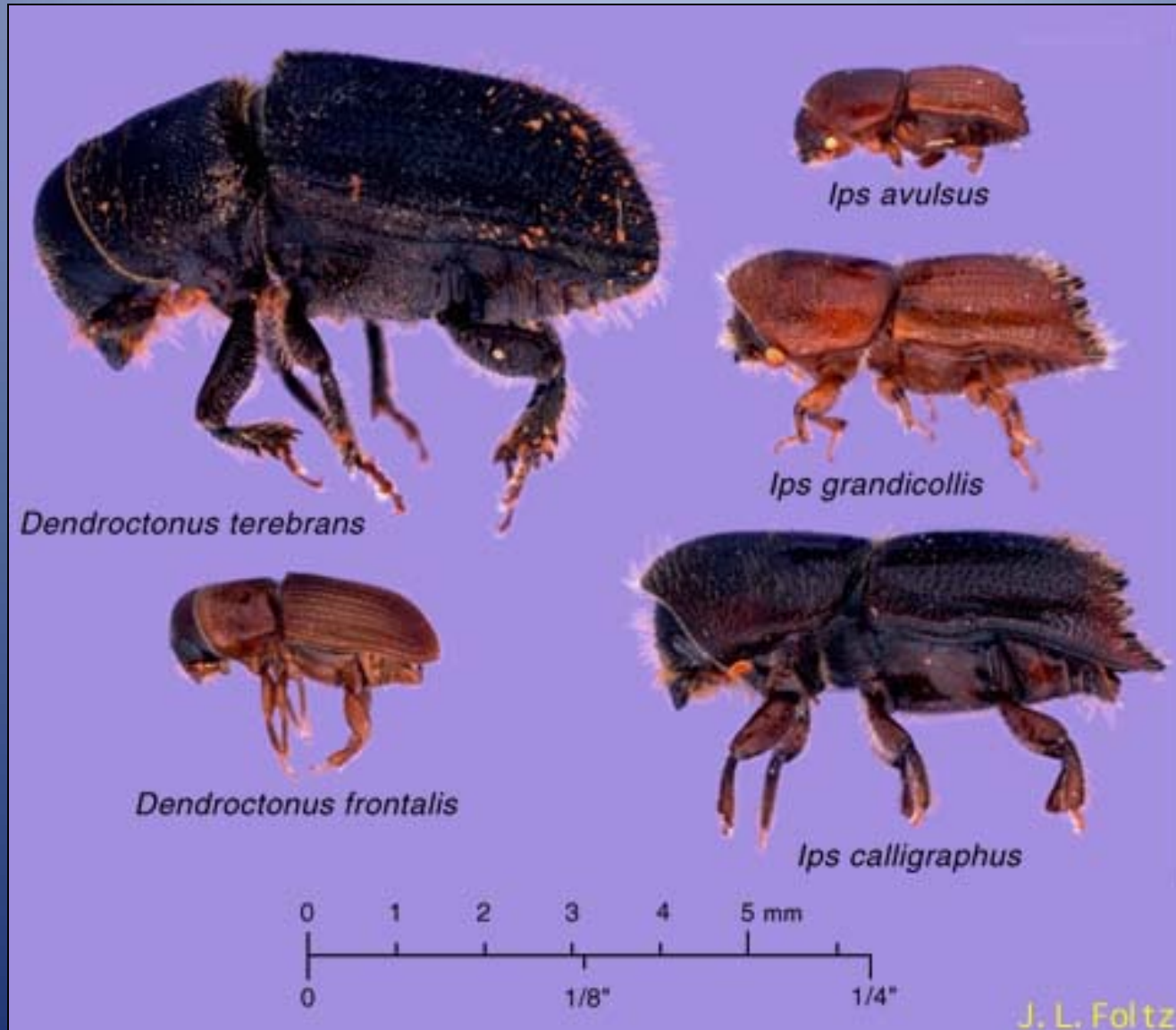
# Black Turpentine Beetle

*Dendroctonus terebrans*



- Adults are 6-10 mm in length and dark brown to black
- Sometimes confused with Ips but are more heavily bodied without a scooped out posterior
- Pitch tubes on lower bole or stump are evidence of infestation
- Pitch tubes can be large (walnut size) and are white to reddish in color

# Morphological Comparison



# Hylastes spp.

- Root Feeding bark beetles
- Transport *Leptographium* spp. of fungi
- Contribute to Southern Pine Decline
- Species found throughout the United States

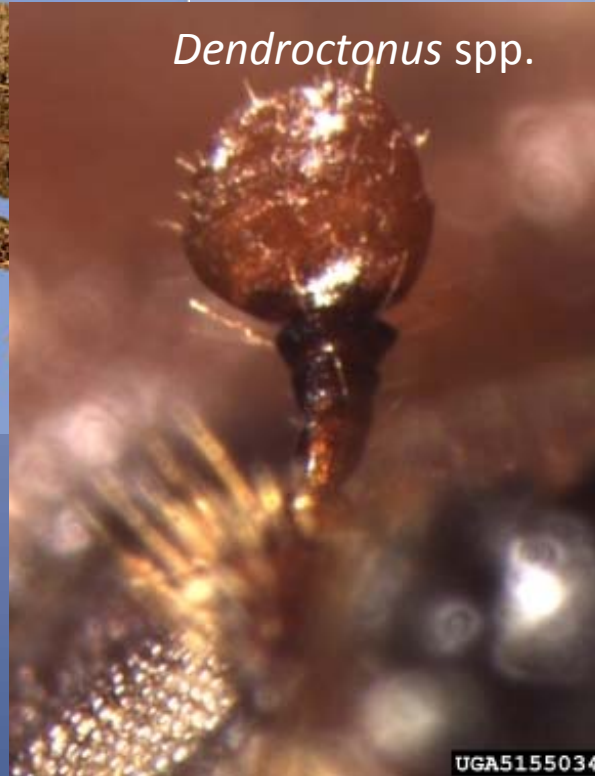
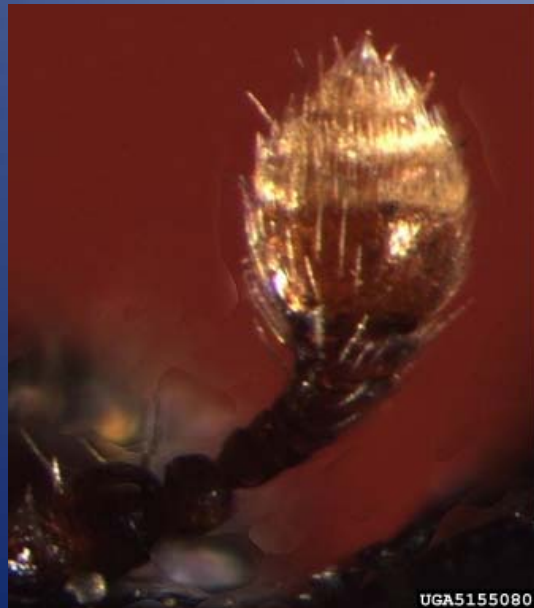


# Hylastes salebrosus

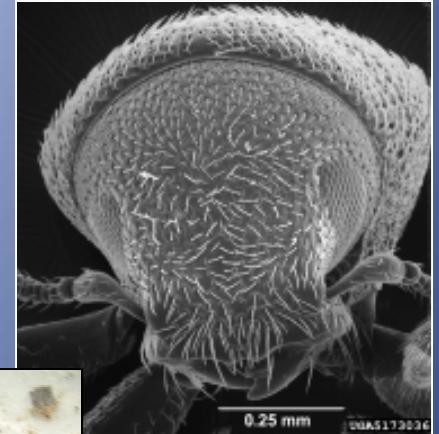
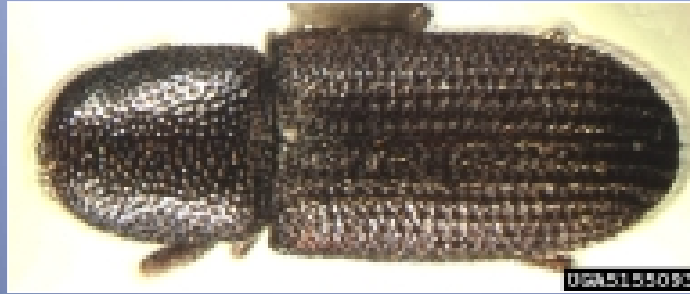


*Dendroctonus* spp.

- Adults are 4-5 mm in length
- Dark red to brown in color
- Indentations on body



# *Hylastes tenuis*



➤ Smaller than *H. salebrosus*, but looks similar

➤ Adults around 3-4 mm



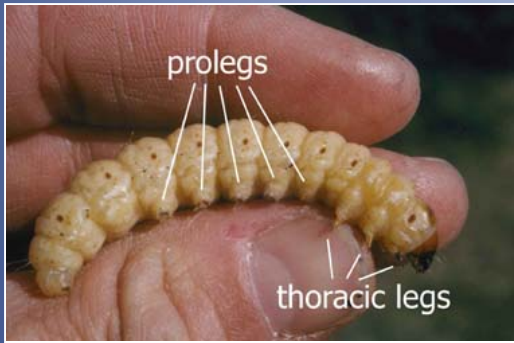
# Hardwood Borers

# Hardwood Borers

- Most attack dead trees and logs but some attack healthy, living trees
- Round and flat-headed larvae bore through and eat the wood, pupate, and then exit tree as adults
- Species vary from 1-3 generations per year



# Carpenterworm (Lepidoptera)



- Larvae can be up to 2 in (50 mm) long and colored pinkish red to greenish white
- Pupae are dark brown
- Adults are dark with yellow and orange spots on the wings with a black border

# Coleoptera

## Cerambycidae

- Larva: round-headed borer, thorax is not enlarged.
- Adult: long-hored beetle



## Buprestidae

- Larva: flat-headed borer, flattened appearance of the thoracic segments.
- Adult: fore wing with metallic gold, bronze or green cast color.



# Southern Pine Sawyer



Figure 7. Pupa of sawyer beetle.



- Larvae are whitish to yellow, legless, and about 60 mm long; can hear them feeding in felled trees
- Adults are mottled gray to brown and about 25-30 mm long
- Antennae are 50-75 mm long
- Signs of attack include funnel-shaped pits or egg niches in bark

# Locust Borer

(round-headed borer)

- Only attacks locust trees; black locust under stress
- Larvae bore into the wood and pupate
- Larvae are white and about 1 inch (25 mm)
- Adults are black with yellow stripes and feed on goldenrod



# Red Oak Borer



- Larvae are white, shiny, and have tiny legs
- Adults are about 25 mm in length with light brown to reddish-brown hairs
- The length of antennae equals to body length or twice of the body length

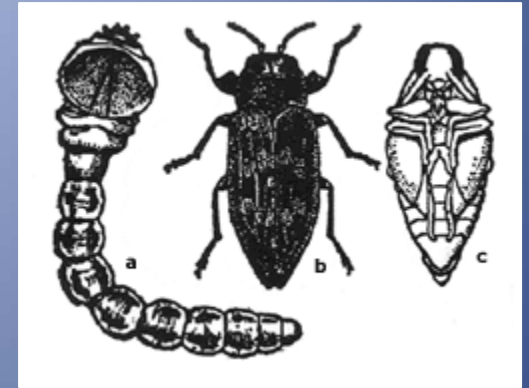
# Asian Longhorn Beetle



- Adult bodies are 20-30 mm long
- Long black and white antennae
- Larvae feed on living tissue, pupate in the tree, and emerge through big exit holes
- Attack living trees and cause high mortality

# Sculptured Pine Borer

- Adult is large, shiny, slightly bronzy.
- Larvae are large, creamy white.
- Thoracic segment is marked with a 'V'



Sculptured Pine Borer

# Emerald Ash Borer

- Adult: dark metallic green, bullet shaped.
- Larvae: whitish, creating winding, S-shaped galleries in the phloem and outer sapwood.





# Elm beetles and Ambrosia Beetles

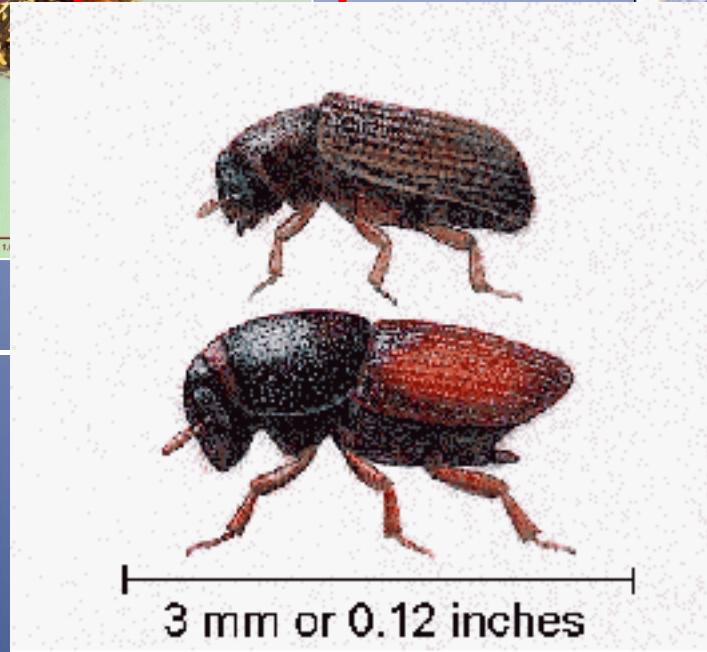
# Elm Bark Beetles



Smaller European



Large Elm Bark Beetle



Disease



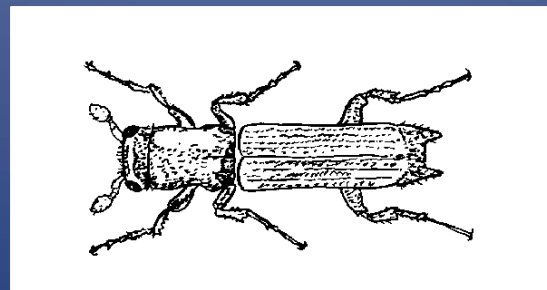
Vertical Galleries



Horizontal Galleries

# Ambrosia Beetles

- Attacks recently cut trees; conifers & hardwoods
- Mainly ruins wood properties; tunnel through but do not consume wood
- Vector blue-stain fungi into the wood & eat the fungi
- Two characteristic spines on back



# Exercises

- Be able to ID both adults and damage, make notes and draw pictures.