

# Comparison of Wood Destroying Beetles

| WD Beetle                                                                                                         | Emergence                  | Exit Hole/Shape | Exit Hole Size              | Age of Wood | Type of Wood                                                                          | Fraiss                                                                                                | Moisture Req.      | Life Cycle                    | Larva Size                                                                                                                              | Size of Adult                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------|-----------------------------|-------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>L</b><br>Lycid<br>True Powder<br>Post Beetle (not<br>common in<br>structural wood -<br>in wood floors)         | December<br>thru<br>Spring | Round           | Little<br>1/32" to<br>1/16" | New         | Feeds on<br>sapwood of<br>Hardwoods<br>only (on<br>sugars,<br>starches &<br>proteins) | <b>Fine</b><br>(tale or<br>four-like)<br>kicked out<br>of exit<br>holes -<br>loosely<br>packed        | Low<br>6% to 30%   | 3 months<br>to 1 year         | Up to 1/4"                                                                                                                              | Up to 1/4"<br>(head<br>visible from<br>above)<br>2<br>segmented<br>clubbed<br>antennae                                                    |
| <b>A</b><br>Anobid Death<br>Watch and<br>Furniture Beetle<br>(common in<br>crawl spaces)                          | Spring<br>March to<br>June | Round           | Average<br>1/16" to 1/8"    | Old         | Feeds on<br>both<br>Hardwoods<br>& Softwoods                                          | <b>Gritty</b><br>(Bun-<br>shaped<br>mixed with<br>pellets)<br>kicked out<br>of exit<br>holes          | High<br>13% to 30% | 1 to 5<br>years<br>(2-3 yrs.) | Up to 1/2"                                                                                                                              | Up to 1/3"<br>(head<br>hidden from<br>above)                                                                                              |
| <b>B</b><br>Bostrichid<br>False Powder<br>Post Beetle<br>(Not common in<br>structural wood -<br>rarely reinfests) | _____                      | Round           | Big<br>1/8" to 3/8"         | New         | Feed on<br>both<br>Hardwoods<br>& Softwoods                                           | <b>More<br/>coarse<br/>than<br/>Lycid</b><br>(sticks<br>together in<br>clumps<br>inside<br>galleries) | _____              | 1 year                        | 1/2" to 1"                                                                                                                              | 1/4" to up<br>to 1/8"<br>(head<br>hidden from<br>above)<br>3<br>segmented<br>clubbed<br>antennae                                          |
| <b>O</b><br>Cerambycid<br>Old House Borer<br>(fairly common<br>in attics &<br>crawl/s)                            | June thru<br>July          | Oval            | Over-Sized<br>1/4" to 3/8"  | New & Old   | Feeds on<br>Softwoods<br>only                                                         | <b>Coarse</b><br>(tightly<br>packed in<br>the<br>galleries,<br>not in the<br>exit holes)              | High<br>13% to 30% | 3 to 12 yrs                   | Up to 1 1/4"<br>(3 distinct<br>ocelli on<br>each side of<br>the head on<br>the side of<br>the<br>mouthparts<br>not on the<br>antennae!) | 5/8" to 1"<br>(head<br>visible from<br>above with<br>2 shiny<br>spots on the<br>pronotum<br>and 2<br>patches of<br>grey on<br>each elytra |

# WOOD DESTROYING BEETLES

## Reinfesting Wood Destroying Beetles



Old House Borer  
(Family Cerambycidae)



These kinds of most beneficial bark beetles are bark borers.  
Photo courtesy Van Winkle & Rogers, Inc.



False Powder Post Beetle  
(Family Bostrichidae)



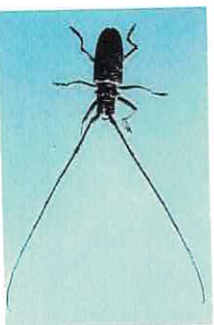
Deathwatch Beetle  
(Family Anobiidae)



True Powder Post Beetle (Family Lyctidae)



## Non-Reinfesting Wood Destroying Beetles & Other Insects



Southern Pine Sawyer  
Family Cerambycidae



Ash Borer  
Family Cerambycidae



Locust Borer  
Family Cerambycidae



Metallic Wood Borer  
Family Buprestidae



Metallic Wood Borer  
Family Buprestidae



Bark Beetles  
Family Scolytidae



Ambrosia Beetles  
Family Scolytidae & Platypodidae



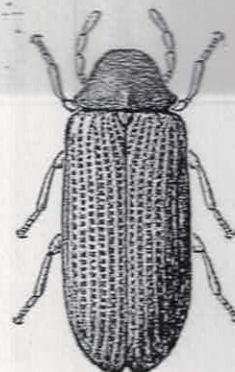
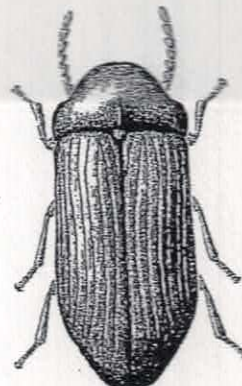
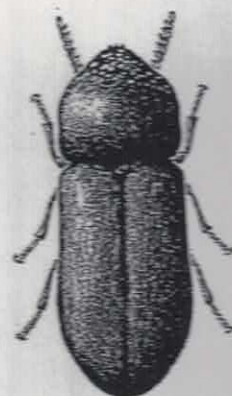
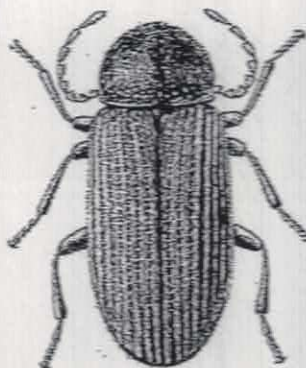
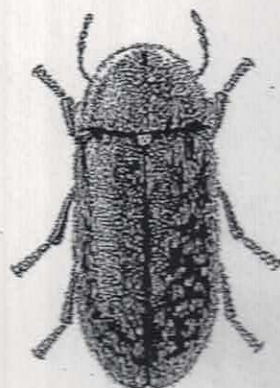
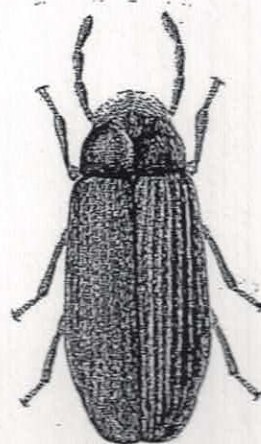
Horntail (Wood Wasp)  
Family Siricidae (Order Hymenoptera)



# ● **Small, Re-infesting Wood Boring Beetles** (Powder Post Beetles – PPBs)

## **Deathwatch and Furniture Beetles** (Family Anobiidae)

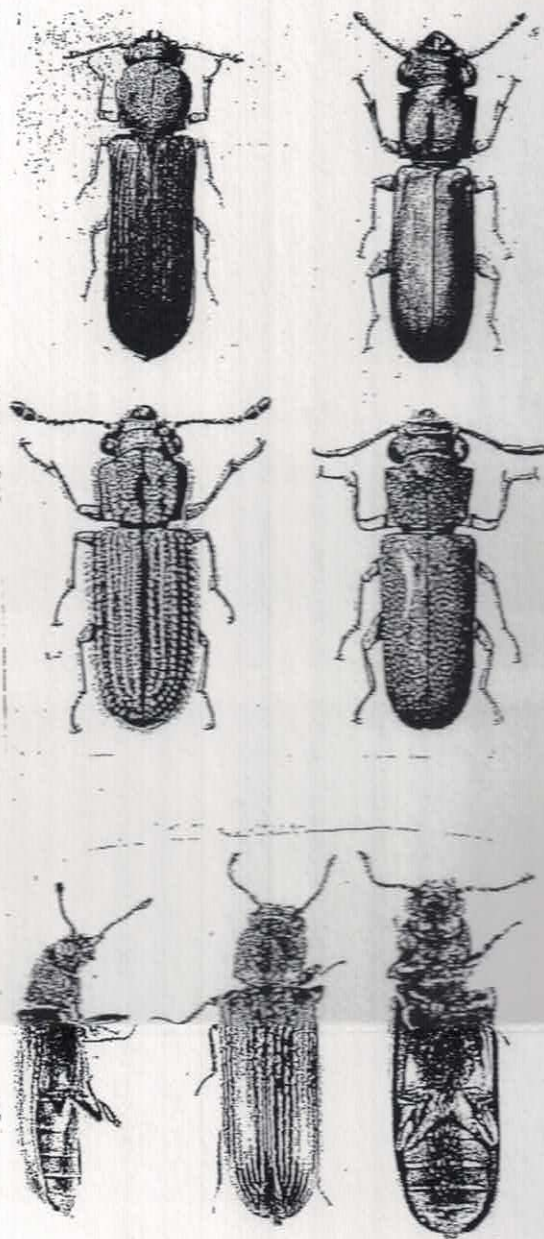
- Feed on primarily on old softwoods and hardwoods
- Feed on wood with high moisture content (13% to 30%)
- Usually found in the structural wood of a crawlspace
- Less commonly found in furniture, paneling, and siding
- Commonly re-infests structural wood of homes
- Life cycle is commonly 1 to 3 years
- Adult lays eggs in cracks & crevices or exit holes of seasoned wood
- Adult emerges from wood during months of April through June
- Adult leaves round exit holes in wood after emergence
- "Gritty" frass generally streams down from the exit holes on the wood
- Exit holes are average in size, 1/16" to 1/8" in diameter
- Adult gets up to 1/3" in length and egg-shaped when viewed from above
- Adult is brown or black in color and its head is not visible from above
- The antennae of some have the last 3 segments lengthened
- The larva gets up to 1/2" in length
- The larva is C-shaped and creamy-white in color



# Small, Re-infesting Wood Boring Beetles (Powder Post Beetles – PPBs)

## True Powder Post Beetles (Family Lyctidae)

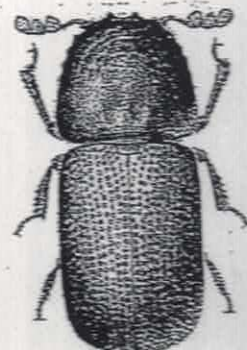
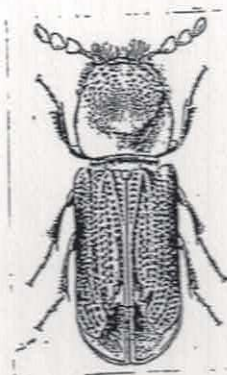
- Feed on hardwoods only, primarily new hardwoods
- Feed primarily of the starches of new wood
- Feed on wood with a lower moisture content (6% to 30%)
- Usually found in hardwood floors, cabinet, furniture, and paneling
- May re-infest hardwoods of a home
- Life cycle is commonly 1 year
- Adult lays eggs in the surface pores of seasoned hardwoods
- Adult emerges from wood in late winter and early spring
- Adult leaves round exit holes in wood after emergence
- "Fine", loose frass is generally kicked out of the exit holes
- Exit holes are small in size, 1/32" to 1/6" in diameter
- Adult gets up to 1/4" in length and is more elongate in shape
- Adult is brown and the head is visible from above
- The last two (2) segments of the antennae are clubbed and much larger than the other segments.
- The larva gets up to 1/4" in length
- The larva is C-shaped and is creamy-white in color



# Small, Re-infesting Wood Boring Beetles (Powder Post Beetles – PPBs)

## False Powder Post Beetles (Family Bostrichidae)

- Feed on new (< 10 years old) softwoods and hardwoods
- Feed on wood with a lower moisture content (6% to 30%)
- Usually found in imported woods and in bamboo
- Rarely infests homes
- Rarely re-infests structural wood of a home
- Life cycle is commonly 1 year
- Adult leaves round exit holes in wood after emergence
- Exit holes are big in size, 1/8" to 3/8" in diameter
- Adult, not just the larvae, will feed on seasoned wood
- Adult gets from 1/8" to 3/8" in length
- Adult is cylindrically-shaped with the head pointed downwards
- The last three (3) segments of the antennae are clubbed (larger)
- The larva gets from 1/4" to 1" in length



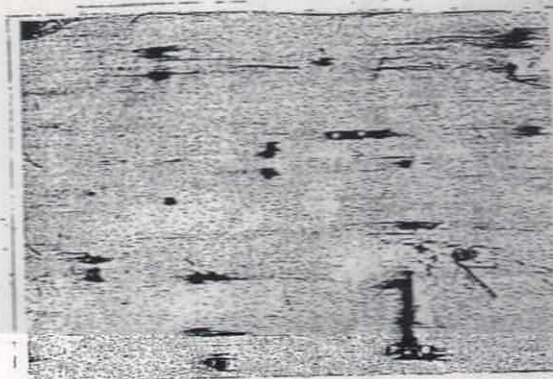
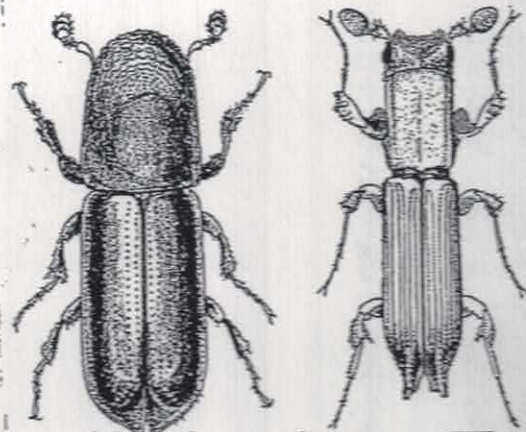
# Small, Non re-infesting Wood Boring Beetles

(that often can be confused with PPBs)

## Ambrosia Beetles

(Families Scolytidae and Playpodidae)

- Adult beetles tunnel deeply into the wood of live trees that are covered with bark
- Their entrance/exit holes are 1/50" to 1/8" in diameter
- Female beetles infect the galleries with Ambrosia fungus spore in the galleries
- Female beetles lay eggs inside the galleries
- The larvae feed on the Ambrosia fungus that grows in the moist wood
- This fungus stains the galleries blue, dark grey, dark brown, or black
- The staining of the wood inside the galleries and surrounding the exit/entrance holes to the galleries is a key characteristic used to identify Ambrosia beetles
- The frass is removed from the tunnels by the female, so there is no frass in tunnels
- Adult Ambrosia beetles do not attack and damage structural wood
- Occasionally, unfinished structural wood in homes is seen to have dark stains inside and surrounding small holes in wood. This wood is not being attacked and no treatment is needed



# Larger, Re-infesting Wood Boring Beetles

## Old House Borer (Family Cermabycidae)

**Adult stage = long-horned wood borer    Larval stage = round-headed borer**

- The Old House Borer is the most common structurally re-infesting wood borer

- Adult Old House Borers are commonly around  $\frac{3}{4}$ " long ( $\frac{5}{8}$ " to 1")

- The adult beetle is brownish-black to black in color

- The prothorax of the adult beetle has a number of grey hairs on its side and it has two raised, shiny black bumps which give it an "owl-like" appearance

- The head of the larva is larger than the tail-end of the larva and is oval when viewed from the front, thus the name "round-headed borer"

- The larva gets as large as  $\frac{3}{4}$ " to 1  $\frac{5}{8}$ " in length

- The larva has three dark ocelli (simple eyes) on each side of the head when viewed from the front

- The larvae leave visible lines on the sides of the galleries they make that give the gallery a "rippled appearance", like parallel waves on the surface of the wood

- As the larva grows, its feeding activity can easily be heard by the homeowner as a ticking or rasping sound

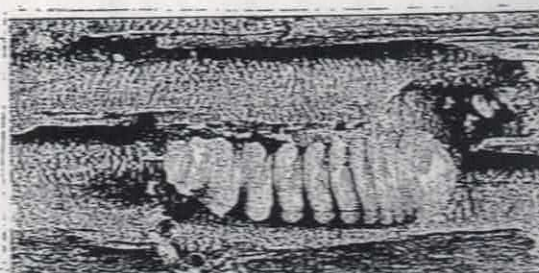
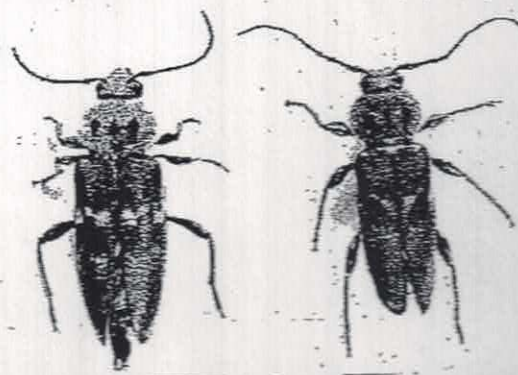
- The larva feeds on new and old softwood (pine) only, but primarily on new softwood

- It is usually found in structural wood of homes (especially in the attic)

- The exit holes left by the emerging adult are oval in shape and  $\frac{1}{4}$ " to  $\frac{3}{8}$ " in diameter

- The frass left by the larvae is tightly packed in the galleries

- The life cycle of the Old House Borer is from 3 to 12 years, but probably 3 to 5 years in the South

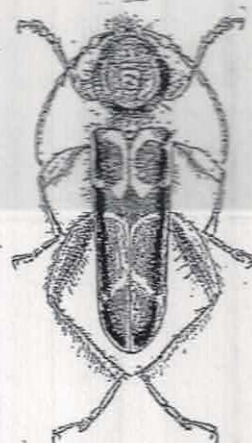
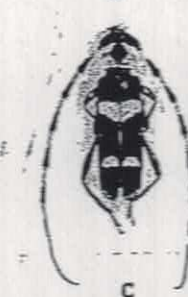
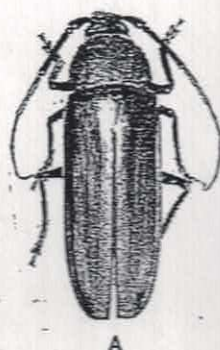


# Larger, Non-reinfesting Wood Boring Beetles (that may be confused with the Old House Borer)

## Other Long-horned Wood Borers (Family Cerambycidae)

Adult stage = long-horned wood borer    Larval stage = round-headed borer

- These beetles get their name, "long-horned" wood borers, because they have long antennae, often as long as or longer than their body length
- The head of the larva is larger than the tail-end of the larva and is oval when viewed from the front, thus the name "round-headed borer"
- Southern Pine Sawyers, Locust Borers, and Ash Borers are commonly found in firewood that is left in the home until Spring, when adult beetles emerge from the firewood
- Round-headed borers infest live and dying trees
- Their frass is coarse to fibrous (like pencil shavings) and often is not found in galleries
- The sides of their galleries are smooth with no markings
- When lumber is made from infested trees and the lumber is not properly kiln-dried or surface dried, adult beetles emerge from the structural wood of homes.
- These wood borers will not re-infest structural wood unless it is wet.
- Infested homes do not need to be treated
- Occasionally, a new home will be heavily infested and the customer will request that it be fumigated.

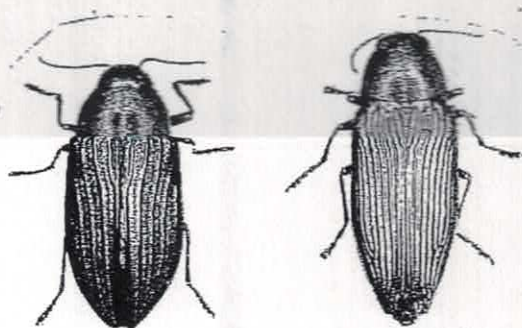
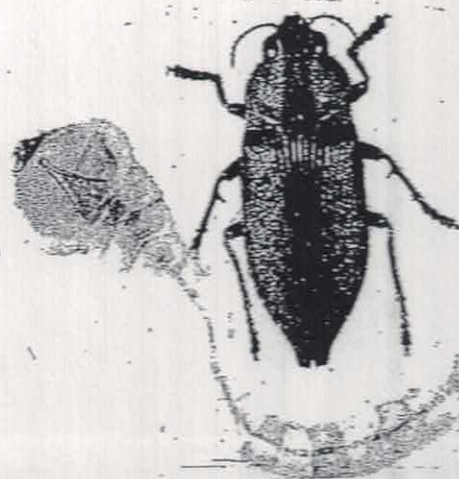


# Larger, Non-reinfesting Wood Boring Beetles (that may be confused with the Old House Borer)

## Metallic Wood Borers (Family Buprestidae)

Adult stage = Metallic wood borers    Larval stage = flat-headed borers

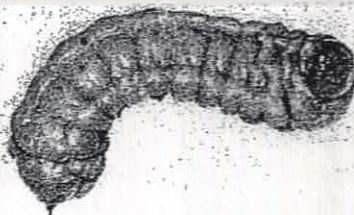
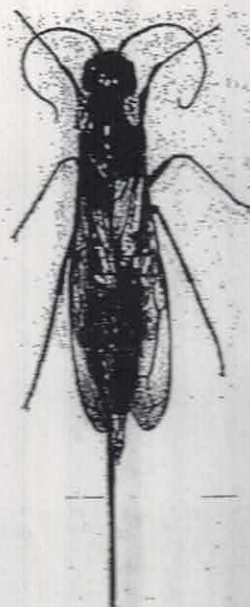
- Adult beetles have a shiny, metallic color, ranging from bright blue, green, golden, to bronze
- The larva of this beetle is long and the front end (the head) is enlarged and flattened in shape
- These wood borers attack dead tree limbs and logs
- Their frass is sawdust-like and is tightly packed within the galleries
- The exit holes of the adult are broadly-oval, and tend to be longer and thinner than the oval exit holes made by the long-horned wood borers
- They do not re-infest dry, seasoned structural wood in homes, but their life cycle may be so long that they emerge from a home several years in a row...and may require fumigation if a structure is heavily infested



# Large, Non-reinfesting Wood Boring Wasps (that may be confused with the Old House Borer)

## Horntails (Family Siricidae)

- They get their name "Wood Wasp" because their larvae feed on dead wood
- They get their name "Horntail Wasp" because the females have very long tails that are actually their stout egg-laying organs called the "ovipositor"
- The life cycle of the wood wasp begins when a tree dies. The tree may die from old age, from disease, insect attack, a forest fire, or when someone cuts the tree down for lumber or firewood.
- Once a tree dies, its chemistry changes and chemical signals are given off that alert the female wood wasp that a new food source for its larvae has been provided.
- The female quickly seeks out the available tree and lays her eggs in the bark
- Apparently these wasps only lay eggs on trees that still have bark on them, and this is a key to the relative importance of these wasps in structures
- The adult bores a 1/4" exit hole as it emerges from the wood.
- If this wood is used to build houses, the horntail may emerge from the wood, but it does not re-infest seasoned, structural wood
- There is no reason to treat for horntails



# Wood-boring Beetles, Bees, and Wasps

There are numerous species of wood-boring insects which occur in houses. Some of these cause considerable damage if not controlled quickly. Others are of minor importance and attack only unseasoned wood. Beetles, bees, and wasps all have larval, or grub, stages in their life cycles, and the mature flying insects produce entry or exit holes in the surface of the wood. These holes, and sawdust from tunnels behind the holes, are generally the first evidence of attack visible to the building inspector. Correct identification of the insect responsible for the damage is essential if the appropriate control method is to be selected. The characteristics of each of the more common groups of beetles, bees, and wasps are discussed following the table which summarizes the size and shape of entry or exit holes produced by wood-boring insects, the types of wood they attack, the appearance of frass or sawdust in insect tunnels, and the insect's ability to reinfest wood in a house.

To use the table, match the size and shape of the exit or entry holes in the wood to those shown in the table; note whether the damaged wood is a hardwood or softwood and whether damage is in a new or old wood product (evidence of inactive infestations of insects which attack only new wood will often be found in old wood; there is no need for control of these). Next, probe the wood to determine the appearance

of the frass. It should then be possible to identify the insect type. It is clear from the table that there is often considerable variation within particular insect groups. Where the

| Shape and size (inches) of exit/entry hole                     | Wood Type                    | Age of Wood Attacked <sup>1</sup> | Appearance of Frass in Tunnels                                                                            | Insect Type                                            | Reinfest |
|----------------------------------------------------------------|------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------|
| round 1/50-1/8                                                 | softwood & hardwood          | new                               | none present                                                                                              | ambrosia beetles                                       | no       |
| round 1/32-1/16                                                | hardwood                     | new & old                         | fine, flour-like, loosely packed                                                                          | lyctid beetles                                         | yes      |
| round 1/16-3/32                                                | bark/sapwood interface       | new                               | fine to coarse, bark colored, tightly packed                                                              | bark beetles                                           | no       |
| round 1/16-1/8                                                 | softwood & hardwood          | new & old                         | fine powder and pellets, loosely packed; pellets may be absent and frass tightly packed in some hardwoods | anobid beetles                                         | yes      |
| round 3/32-9/32                                                | softwood & hardwood (bamboo) | new                               | fine to coarse powder, tightly packed                                                                     | bostrichid beetles                                     | rarely   |
| round 1/6-1/4                                                  | softwood                     | new                               | coarse, tightly packed                                                                                    | horntail or woodwasp                                   | no       |
| round 1/2                                                      | softwood                     | new & old                         | none present                                                                                              | carpenter bee                                          | yes      |
| round-oval 1/8-3/8                                             | softwood & hardwood          | new                               | coarse to fibrous, mostly absent                                                                          | round-headed borer                                     | no       |
| oval 1/8-1/2                                                   | softwood & hardwood          | new                               | sawdust-like, tightly packed                                                                              | flat-headed borer                                      | no       |
| oval 1/4-3/8                                                   | softwood                     | new & old                         | very fine powder & tiny pellets, tightly packed                                                           | old house borer                                        | yes      |
| flat oval 1/2 or more or irregular surface groove 1/8-1/2 wide | softwood & hardwood          | new                               | absent or sawdust-like, coarse to fibrous; tightly packed                                                 | round or flat headed borer, wood machined after attack | no       |

inspector is unsure of the identity of the insect causing damage, a qualified entomologist should be consulted.

<sup>1</sup> New wood is defined as standing or freshly felled trees and unseasoned lumber. Old wood is seasoned or dried lumber.