

## POWDERPOST BEETLES

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Powderpost beetles (ppb) can cause more confusion than any other structure-infesting pest. Homeowners often receive conflicting opinions as to whether the "damage" they are seeing is indeed ppb. Mistakes also are made in determining if the infestation is active and if so, how it should be managed. Incorrect information results in unnecessary treatment and expense, or a failure to protect the client's property.

This publication explains how to recognize ppb damage, control existing infestations and prevent future problems.

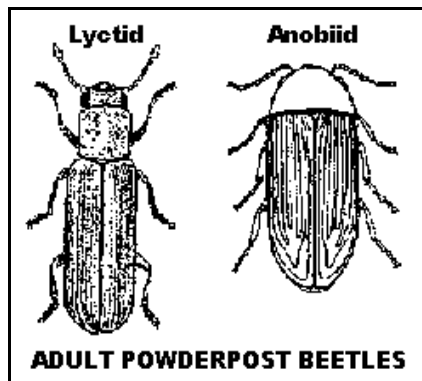
### Biology and Behavior

Powderpost beetle is a term used to describe several species of small (1/8-3/4 inches long), wood-boring insects which reduce wood to a fine, flour-like powder. Damage is done by the larvae as they create narrow, meandering tunnels in wood as they feed. Infestations are discovered after noticing small, round "shotholes" in the wood surface. These are exit holes where adult beetles have chewed out of the wood after completing their development. Newly-emerged adults mate and lay eggs on or below the surface of bare (unfinished) wood.

The eggs hatch into tiny larvae which bore into the wood, emerging as adults 1-5 years later, usually during April - July. Homeowners are more likely to see damage than the beetles, themselves, because the adults are short-lived and are active mainly at night.

The two most common and destructive families of ppb in Kentucky are the Lyctidae and Anobiidae. Lyctid powderpost beetles attack only wood products manufactured from hardwoods, e.g., oak, ash, walnut and hickory. Consequently, infestations are most often found in wood paneling, molding, window and door frames, plywood, hardwood floors, and furniture.

Imported tropical hardwoods are especially prone to lyctid beetle attack because of poor storage and drying practices prior to shipment to this country. Articles made of bamboo also are commonly infested. Rafters, joists, studs and other structural framing of homes are not normally attacked by lyctid beetles since these wood members are almost always constructed from pine or



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other softwoods.

Lyctids rarely infest wood older than five years. Thus, infestations generally are encountered in new homes or newly-manufactured articles. In almost all cases, infestation results

from wood that contained eggs or larvae at the time it was placed in the home. This is significant because responsibility for damage/replacement often resides with the builder, cabinet maker or furniture manufacturer rather than the homeowner. Typically, the infested article was constructed from wood which was improperly dried or stored.

Anobiid ppb may attack both hardwoods and softwoods, which means that infestations may be found in all the same places as Lyctid beetles, as well as in structural timbers (beams, sills, joists, studs, subflooring, etc). Maple, beech, poplar and pine are especially susceptible to attack. Anobiids prefer to infest wood which is damp; therefore, infestations usually begin in moist, poorly-ventilated areas such as crawl spaces, basements, garages and utility sheds. Under favorable conditions of moisture and temperature, infestations may spread upwards into walls and upper levels of the structure, including furniture. Infestations may occur as a result of using infested lumber, or from beetles flying in from outdoors or being carried in on firewood. Infestations develop slowly, but wood can be reinfested year after year.

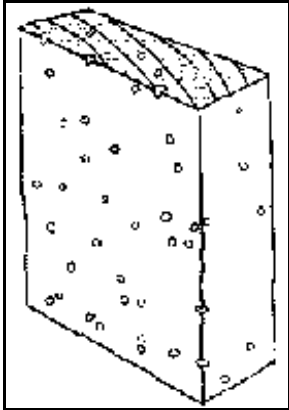
### Detecting Infestations

The key to avoiding serious problems from powderpost beetles is early detection. As noted earlier, homeowners are much more likely to see damage than the beetles themselves. Since tunneling and development of the larvae takes place entirely below the wood surface, the only signs of infestation are the emergence holes made

by the adults and the powder-like frass sifting from the holes.

### Lyctid or Anobiid?

Knowing how to differentiate lyctid from anobiid damage is more than academic since anobiids have a broader range of woods that they can potentially infest. Both lyctid and anobiid ppb chew small, circular emergence holes in the surface of wood.



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Holes made by lyctid beetles are about the diameter of a pinhead whereas exit holes made by anobiids are slightly larger. One way to differentiate holes of the two species is to insert a "click-type" (refillable) ball-point pen into the exit hole; only the tip of the ball will fit through a lyctid beetle emergence hole.

If the hole was made by an anobiid, the tip of the pen will enter part-way up the angled face of the point.

Another way to differentiate powderpost beetles is from the consistency of the powder (frass) that sifts out of the exit holes. Lyctid frass is extremely fine and feels like talc when rubbed between the fingers. Anobiid frass is also powderlike, but feels gritty.

### Active or Inactive?

Infestations of ppb sometimes die out on their own accord. Therefore, it is important to be able to determine whether the infestation is active or inactive. Active infestations will usually have powder the color of fresh-cut wood sifting from the exit holes. In contrast to old, abandoned holes, new holes will not have taken on the weathered appearance of the surrounding wood. Powder streaming from recently opened holes may accumulate in small piles beneath the exit holes. If these piles of powder are covered over with a film of dust or debris, the damage is old. Careful observation may be required to distinguish new powder from frass which has been dislodged from old larval galleries by vibrations.

One final means of confirming that an infestation is active is to mark or seal any existing exit holes, sweep or vacuum up all powder, and recheck the wood for new holes and powder at a later date. Since most ppb emergence occurs from April-July, it might be worthwhile to wait until the following spring/summer to determine if new holes and fresh powder are present

(this is especially true when attempting to make a determination during the fall or winter).

### Control

Homeowners should know that there are various options for controlling ppb. Selecting that which is best depends on a number of factors including the severity of infestation, area being attacked, potential for reinfestation and treatment expense the customer is willing to bear. **Powderpost beetles damage wood slowly ; thus, homeowners should not feel as though they must act immediately in order to preserve the structural integrity of their home.** A "wait and see" approach is often desirable, especially when there is still doubt as to whether the infestation is active.

#### 1. Prevention

Most ppb are introduced into homes in lumber or finished wood products (e.g., furniture, paneling or flooring). Lumber which has been improperly stored or dried should not be used, particularly if beetle exit holes are present. Many of the most serious infestations of ppb result from people using old lumber from a barn or woodpile behind their house to panel a room or build an addition.

Powderpost beetles will only lay their eggs on bare, unfinished wood. Wood which is painted, varnished, waxed or similarly sealed is generally safe from attack provided no unfinished surfaces are exposed. Bare wood can be protected from attack by painting or finishing exposed surfaces. Beetles emerging from finished articles such as furniture were usually in the wood before the finish was applied. (Note: beetles emerging from finished wood can, however, reinfest by laying eggs in their own exit holes; sealing the holes prevents this possibility).

#### 2. Moisture Control

Powderpost beetles, especially anobiids, have specific moisture requirements for survival. Since wood moisture levels below 13% (during spring and summer) are generally unsuitable for anobiid development/reinfestation, it's advisable to install a moisture barrier in the crawl space of infested buildings. Covering the soil with 4-6 mil polyethylene reduces movement of moisture into the substructure and reduces the threat of an infestation spreading upwards into walls and upper portions of the building.

Another way to lower wood moisture content in damp crawl spaces is to increase ventilation. This can be accomplished by installing foundation vents (1 square-ft

of vent area per 150 square-ft of crawl space). Moisture meters, used by some pest control operators, are useful tools for predicting the reinfestation potential of ppb in wood.

### **3. Wood Replacement**

If the infestation appears to be localized (e.g., only a few holes in a board or sheet of paneling), simply replacing the board or sheet of paneling may solve the problem. If additional holes begin to appear in adjacent areas, additional action can then be taken.

### **4. Surface Treatment with Insecticides**

A number of insecticides are labeled for surface treatment of bare, exposed wood. Spraying or brushing these materials onto infested wood creates a barrier which kills adult beetles as they chew out of wood, and newly-hatched larvae attempting to bore into wood. Pesticidal formulations containing "borate" are especially effective against ppb in that they penetrate and kill beetles within wood, as well as those entering or exiting the wood surface. Killing larvae while still within their tunnels is advantageous, especially where there is concern about further marring of the surface of finished articles with additional emergence holes.

For borates to penetrate wood, the surface must be unfinished. Therefore, joists, sills, rafters, subflooring, studs, decking and siding are all excellent candidates for treatment. Although borates will not penetrate paint or varnish, they will penetrate wood surfaces previously treated with a water-repellent stain (e.g., wood siding, decks, or log homes), provided the water-repellency is broken down by pressure washing prior to treatment. A wood floor infested with ppb can likewise be treated with borates, but would first need to be sanded to remove the finish.

The two borate formulations currently registered for residual surface treatment of wood are Bora-Care(R) and Tim-Bor(R). Both formulations are virtually nontoxic, odorless, and remain effective for as long as 40 years. Both products are available through professional pest control operators. Customers wishing to perform the application themselves can, with some effort, obtain Bora-Care and Tim-Bor through chemical distributors and lumber companies.

One final point to remember when applying borates or other liquid surface treatments is that the application will only control infestations which are accessible, i.e., wood that is exposed and can be reached for treatment. Infestations which have spread into walls or between floors are candidates for more drastic measures such as fumigation.

### **5. Fumigation**

Fumigation is an expensive means of ridding a structure of powderpost beetles and should be considered a last resort. However, in the case of severe, widespread infestations, it may be the only option. Instances where structural fumigations are warranted are when infestations have spread into walls, between floors, and other areas where access/wood removal is impractical. The best way to avoid such problems is through early detection and implementation of one or more of the corrective actions mentioned above.

Fumigation of infested furniture, antiques and other manufactured articles can be done at a substantially lower cost than fumigating an entire building by placing the items under tarps, in trailers, or in vaults that maintain gas concentrations at high levels. This service is offered by some pest control companies.