MAINTENANCE GUIDEBOOK VII
TERMITE, INSECT AND RODENT CONTROL

CHAPTER THREE
MANAGEMENT OF OTHER WOOD-DESTROYING INSECTS

SECTION A GENERAL

1. INTRODUCTION

There are several hundred species of beetles, ants, and wasps that attack the wood in human-made structures. However, most of their damage is minor, except that caused by the powderpost beetles, carpenter ants, and old house borers discussed below. For more information on groups not covered here, please refer to Moore's *Wood-Inhabiting Insects in Houses.*

2. POWDERPOST BEETLES

There are several groups of powderpost beetles, and it is critical to know which type of beetle is present in order to determine the necessary control methods, or if control is necessary at all.

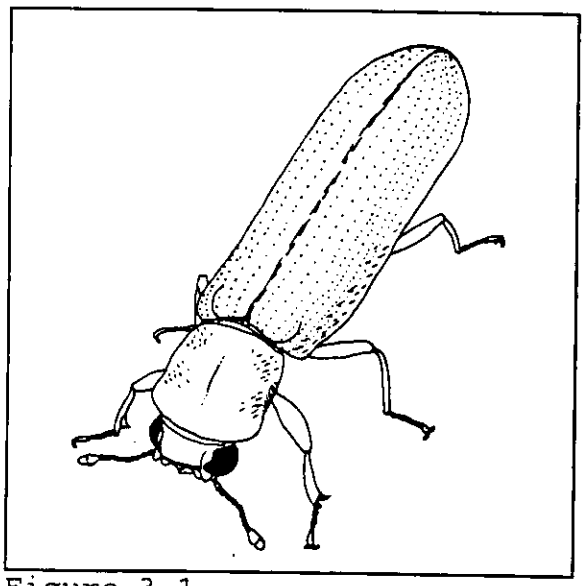

Figure 3-1

The first group is known as **lyctid powderpost beetles**. Lyctids are small, reddish-brown to black beetles about 1/8 to 1/4-inch long (Fig. 3-1), whose life cycle is a year or less, and takes place entirely within the wood, except for mating. They only attack the sapwood of hardwoods with large pores, such as oak, hickory, ash, walnut, pecan, and many tropical hardwoods. Since they attack both new and seasoned wood, they may infest structural members and panelling, furniture, and flooring.

Their damage appears when larvae construct numerous galleries, about 1/16-inch in diameter, throughout the wood. Exit holes 1/32 to 1/16-inch in diameter on the wood surface (made as newly emerged adult beetles escape from the wood), coupled with fine sawdust-like frass, may be the only evidence that lyctid beetles are at work. The frass may collect below the infested wood on spider webs, or it may fall out when the wood is lightly tapped. The interior of wood may be so riddled with galleries that the remaining structure is only a

veneer of surface wood. Replacement or removal of panels may be the best method if the infestation is not structural. However, if structural members are involved, the treatment depends on the extent of the infestation. If only exposed timbers are involved, an insecticidal spray may be the best treatment. But if the extent of the infestation is uncertain, one should carefully examine and probe-delineate the infested wood before treatment.

Anobiid beetles, also known as "death-watch" or "furniture beetles," belong to the powderpost beetle group. The adult beetles are 1/8 to 1/4-inch in length and reddish-brown to black in color. However, adults are rarely seen, and it is the fine frass, pellets, and exit holes (1/16 to 1/8-inch in diameter) which indicate their presence. Their damage includes boring in the sapwood of both hardwoods and softwoods, and reinfestation of seasoned wood if conditions are favorable. Attacks often begin in attics or in poorly ventilated crawl spaces, then spread to other parts of the house.

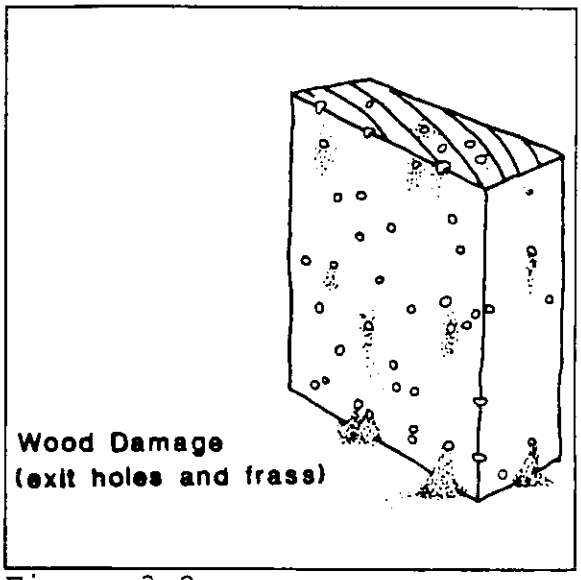

Figure 3-2

If the frass is yellowed or partially caked on the surface where it lies, the infestation is probably old or already controlled. It may take ten years or more for infestations to become significant enough to be noticed. At this point, both large numbers of exit holes and large quantities of whitish frass are observable (Fig. 3-2). Once the infestation is noticed, control, as with lyctids, depends on the extent of the infestation. The options are essentially identical to those listed for control of lyctid beetles.

3. BOSTRICHID (FALSE) POWDERPOST BEETLES

The size of various species ranges from 1/4-inch (most common species) to 2 inches (uncommon species). All of the species are elongate, cylindrical, compact beetles with a flat-headed appearance in profile. The whitish larvae are similar to other powderpost beetle larvae. Their life cycle is relatively short (about a year). There are several species in this group. Among the well-known species are the bamboo borer, the red-shouldered shot-hole borer, the oriental wood borer, the black polycaon, and the lead cable borer. Some of the species are pests of stored products such as grains.

Although this group reinfests wood, it rarely does severe economic damage. Most damage noticed in construction timbers occurs before curing, while moisture content of the wood is high. An exception is bamboo and weakened (from moisture or other damage) structural timber, in which considerable

damage may occur. The appearance of frass is similar to that of lyctids, except that it often forms small cakes or clumps. However, unlike the lyctid powderpost beetles, exit holes are free of frass and are 1/32 to 3/8-inch in diameter, depending upon species.

4. OLD HOUSE BORER

This pest, a native of northern Africa, spread to the US through Europe, and is now ranked second to termites as a pest of seasoned wood in structures. Its distribution is primarily along the east coast, with occasional findings in other states east of the Mississippi River. The old house borer, *Hylotrupes bajulus*, is a large brownish-black, slightly flattened long-horned beetle (Fig. 3-3) that ranges from 5/8 to 1 inch in length and has two prominent bumps on the prothorax. The larva is also large (up to 1-1/4 inches long), and residents may hear their gnawing sounds (clicking). Unfortunately, evidence of their presence, bulging of the surface wood, only occurs when larvae are near maturity. Eggs are placed in small cracks or in the joints between floor joists and other structures.

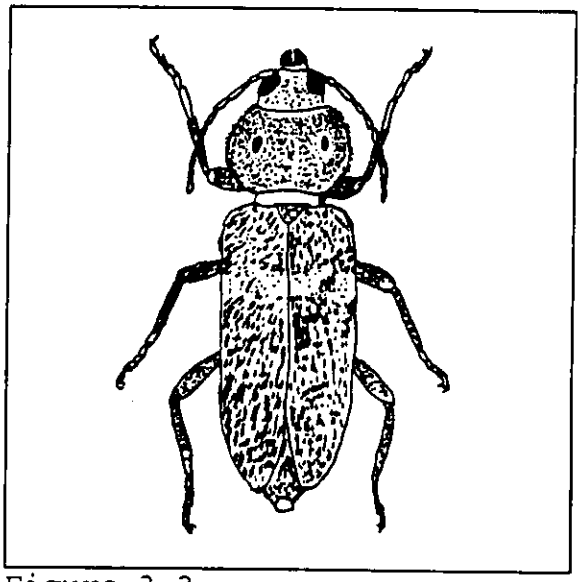

Figure 3-3

Figure 3-4

Their life cycle in the northeastern states may be more than six to eight years, while in the southeast it is only three to five years. Adults may remain in galleries for up to ten months before emerging, but when they do, usually in June or July, they live just weeks before they mate, lay eggs, and die.

The old house borer usually occurs in new, not old wood, as the name implies. However, it usually escapes notice until years after the completion of the structure. Infestation by a second generation of borers occurs rarely in well-ventilated, centrally heated structures. When such reinfestation occurs, there may be overlapping generations of borers in the structure for many years.

Favorite attack sites include attic framing, floor joists, and wood studs. The larvae may reduce the

sapwood area of these timbers to mere powdery frass, but fortunately the damage is localized. The fecal pellets are rod-like and crumble easily. The most characteristic feature of infestation is the damage, which is striking because of the size (up to 3/8-inch in diameter), shape (oval), and rippled appearance in the galleries (Fig. 3-4, previous page). Just prior to emergence, larvae may create bulging in the wood. Exit holes are also oval in shape and surrounded by frass and feces.

5. MISCELLANEOUS BORERS

There are many other borers that live in wood, although most do not survive to reinfest seasoned wood. One of the exceptions is the flat oak borer (*Smodicum cucujiforme*). This species infests seasoned dry oak heartwood from New York to Florida and west to Texas. Adults are medium sized (5/16 to 7/16-inch long), brownish, elongated, and slightly flattened like typical long-horned borers. They have an extended life cycle of one to two years in the south, with longer life cycles in northern regions. In the Gulf Coast states they can cause severe damage to stored lumber.

The appearance of other long-horned beetles and metallic wood-boring beetles may cause concern because their iridescence readily attracts attention. These beetles come into the house in already-infested wood, and, once emerged, do not reinfest. Other species that may appear in houses, but do not reinfest seasoned lumber, include the ambrosia beetles and bark beetles. They are brought into the house with firewood and when the bark falls off, their intricately carved galleries become visible.

SECTION B INSPECTION FOR WOOD-BORING BEETLES

Careful inspection is the key to determining what species is causing damage and is worth treating. It is essential to note the appearance of wood, moisture conditions, location of infestation, type of frass, beetles found, fecal pellet presence and appearance, appearance of galleries, and size and shape of exit holes. It is advisable to collect as many specimens as possible and, if necessary, give them to an expert for identification. This means that the HA's pest manager will have to work not only with a flashlight, but also with sample-collection vials, a knife, forceps, and perhaps a hand lens.

SECTION C PREVENTION AND CONTROL MEASURES

Prevention and control require thorough knowledge of beetles, their life cycles, and damage potential, on which a meaningful inspection can be based. Using kiln-dried lumber or pressure-treated wood is one preventive measures. Another is sealing moisture out by painting, and ensuring good ventilation, as most wood-infesting beetles need a 10 to 15 percent moisture content to flourish, depending upon species. Another method for prevention and treatment is pre-treating wood members by painting or spraying wood

with sodium isoborate products. This reduced-risk compound can be applied to wood either before or after installation, so remedial treatment as well as prevention is possible in existing residences. It should be remembered that only currently registered pesticides should be used.

If there is reason to suspect that beetles are present in finish or trim wood to be installed in areas which will be difficult to treat or replace later, heat sterilization or fumigation with pesticides may be advisable. Heat treatment of infested wood requires wood temperatures of 120 degrees F for four hours, or up to 140 degrees F for two hours, with wood temperature measured in the center of the wood member. If bostrichid beetles are involved, the higher temperature should be used. In cases of severe infestation, fumigation, as described in Chapter Two, Section I-3, may be the only option.

SECTION D CARPENTER ANTS

Carpenter ants (*Camponotus spp.*) are social insects which live in small to occasionally large nests. Unlike other ants found in structures, they excavate wood and build nests in it, but they do not eat wood as do termites. They occur throughout the contiguous 48 states and Hawaii, especially in the Pacific Northwest and the northeastern states. Carpenter ants are nocturnal forest-dwelling insects that, in nature, live in dead and rotting logs and trees, under stones, and in leaf litter at elevations up to 9,000 feet. More than fifteen kinds of carpenter ant are serious structural pests in this country, some more common in or restricted to certain geographic areas than others. All carpenter ants show good cold tolerance.

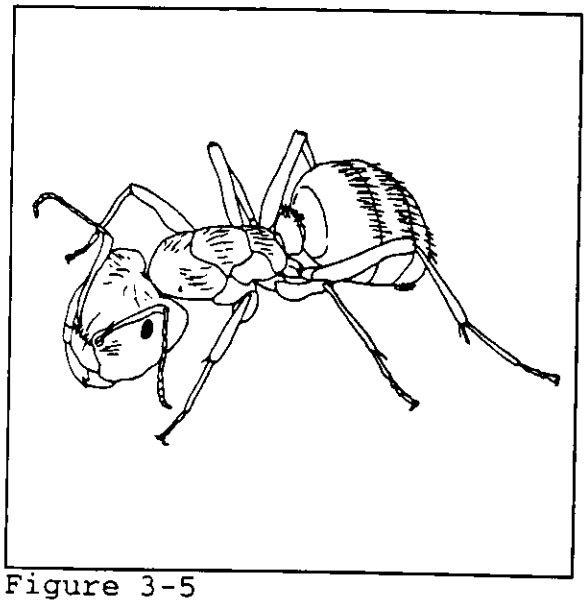

Figure 3-5

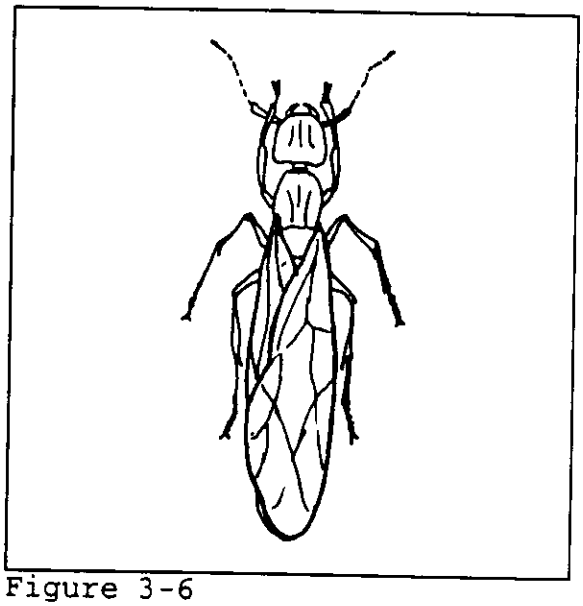

Figure 3-6

Carpenter ant workers are large, 3/16 to 5/8-inch long, and usually black (although not invariably so) and can inflict painful stings. As distinct from most house-infesting ants, the waist between the thorax and abdomen has a single node, and the overall profile is continuous (Fig. 3-5). The queen is up to 9/16-inch in length, and, as with the male, may bear wings during the swarming season (Fig. 3-6). Eggs, larvae, and

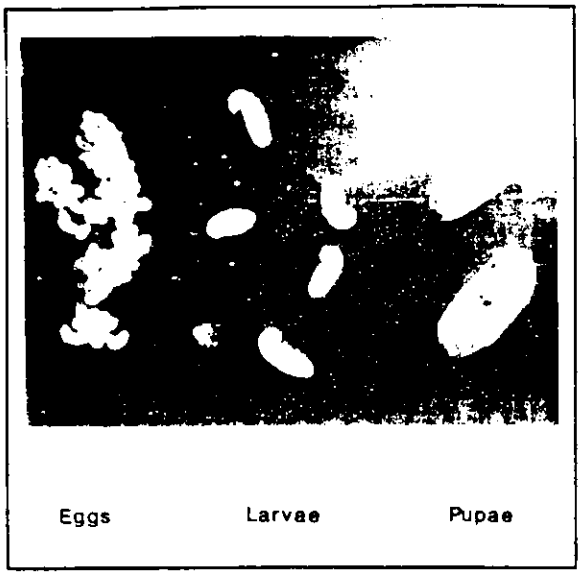

Figure 3-7

pupae occur in the nest (Fig. 3-7).

The larvae are white, legless, and are fed by the workers. Pupae are also white and are often carried about by workers if the colony is disturbed. Adults eat sugar and sometimes proteins found in or around a residence. Adult ants often feed on aphid honeydew found on plants infested with large populations of aphids. Winged adults emerge from about March to July, depending upon location, and establish a nest in moist wood or a cavity adjacent to wood. The colony grows over a three-to-six-year period before it matures; in late fall, winged swarmers appear in the nest, but do not fly and start new colonies until the following spring.

Swarming begins during the first warm or wet days of the year. New housing developments built on cleared woodlots that previously supported carpenter ants are generally the most troubled. Nests are found in water-rotted wood under shower stalls, under leaking roof-valley downspouts, window sills where water accumulates, poorly ventilated areas, and sometimes under insulation in attics. The larger and more long-lived a carpenter ant colony is, the greater is the structural damage.

Outside, carpenter ant workers forage for such foods as honeydew, insects, and ripe fruit juices; ants are not as active during winter. Carpenter ants often move into residences during fall to forage for sweets after plant aphids disappear. Those that have invaded structures seek out sweets, meats, fruit juices, and moist kitchen refuse. Since carpenter ants are usually not very active indoors during winter, a resident's ant complaint during winter is a sure sign of an indoor nest. Carpenter ants usually leave structures for the outside during summer.


Figure 3-8

Carpenter ant nests are galleries that normally run with the grain of sapwood, but unlike termite galleries, have large interconnections, are free of wood shavings, mud, and feces, and appear smooth or sanded (Fig. 3-8).

Wood shavings and frass are thrown out of the nest through slit-like exit holes in the surface. Small piles

of sawdust-like material may build up below tunnels. During summer months, when ants are active at night, chewing sounds are audible. The nest location may not necessarily be in the dwelling; it may be a hundred feet or more away in a stump or decaying log. As with termites, access to buildings is through ground connections, utility wires, or branches touching the building. Since moisture is required to sustain a colony for any length of time, a carpenter ant nest indoors is normally near a moisture-laden area. Indoor nest locations may be in door and window frames, wall voids, roof/ceiling of flat deck porches, and hollow porch columns or behind fascia boards.

Carpenter ants and their relatives are multi-queened and usually excavate wood previously decayed or damaged by other agents. They generally forage in humid atmospheres (under debris, in damp crawl spaces, or in vegetation on building walls) where they find softened wood. Carpenter ants are not thought to be able to start tunnels in wood drier than 15 percent moisture content, and some species require high humidity for the nest.

SECTION E DAMAGE AND PREVENTION AND CONTROL

If undetected for many years, structural damage caused by carpenter ants may be extensive and severe. The damage rarely causes structural failure unless the wood is stressed by strong winds or heavy furniture placed on the infested timber. Prevention methods are similar to those used for termites. They include eliminating moisture sources in the house, breaking connections to the outside, ensuring good ventilation to crawl spaces, sealing all gaps in wood members, removing wood debris from around the house, and using "Timborized" lumber or pressure-treated lumber in areas subject to moisture.

The most difficult part of treatment is locating the nest, which is necessary for elimination. If the nest is outside the house, the structure housing it should either be eliminated or removed. Inside the building, the surface of infested areas may be sprayed with a residual insecticide. In inaccessible areas, wood may require drilling and injection with sodium isoborate, carbaryl, baygon, chlorpyrifos, silica gel, or bendiocarb.

END OF CHAPTER THREE