

CHAPTER EIGHT

Occasional Invaders

In this chapter you will learn about other insects and related arthropods that may be found in structural wood. You will learn to recognize them and understand their importance to the structures you inspect.

There are a number of animals, which may attack wood, however, they are not primary wood destroyers. Some of them are in the wood feeding on other organisms, some are there seeking shelter, while still others are there because their parent oviposited their eggs into a tree and they are merely completing their life cycle. They feed on the wood only during their larval stage. When they complete their life cycle they do not continue to reinfest structural wood. In these cases damage is usually minimal and control procedures are not warranted. **It is essential to be able to correctly identify any insects you collect in or on wooden members.** Some examples of these temporary wood invaders will now be discussed.

Arthropoda: Insecta: Coleoptera

Family Lathrididae: Plaster Beetles: this family consists of about 500 species. Plaster beetles feed on mold (fungi) spores. Their presence indicates a moisture problem exists. They are called plaster beetles, because they frequently attack new homes where wall plaster is still moist and on which mold is beginning to grow. They some time infest stored food products which are slightly damp. They often occur behind walls indicating a water leak or condensation problem. Often found in leaf litter, mosses, decaying wood, and above-ground vegetation. Plaster beetles are small ranging from 1-3 mm (1/25" to 1/8"). They are light brown in color.



Figure 8 - 1

Family Mycetophagidae: Fungus beetles, likewise may be present in a building due to moist conditions, and are looking for a fungal meal. They prefer decaying wood, leaf litter, etc, and may also be associated with stored food products in damp, moldy conditions.



Figure 8 - 2

Family Ptinidae: Spider beetles: are pests of dried stored food products, woolen products and book-bindings, but may tunnel in pine and oak woodwork of old buildings to pupate. They leave a powdery frass that fills their tunnels. *Gibbium aequinoctiale*, pictured here, has been found in a variety of plant materials.



Figure 8 - 3

Family Dermestidae: Carpet beetles: [figure 8 – 4] may be found in damaged wood feeding on lint, dead spiders, insects etc. Adults feed only on nectar or pollen, larvae are scavengers of dried animal and plant material. The hide or leather beetle, *Dermestes maculatus*, will bore into non-food materials to pupate.



Figure 8 - 4

Family Cerambycidae: Pine sawyers, *Monochamus* spp, Pine sawyers, a type of round-headed beetle, are secondary invaders that lay eggs in conifers that are declining as a result of any kind of stress. The name sawyer has been used to describe the larvae because they frequently make loud noises while they are feeding. The adults (fig 8-5) and larvae (fig 8-6) are most commonly associated with or infest freshly cut, felled, stressed, dying, or recently dead trees. Young larvae feed on the inner bark, cambium, and outer sapwood, forming shallow excavations (surface galleries). These galleries are filled with coarse fibrous borings (saw dust) and frass. As they grow older, growing larger with each larval molt, they start to bore back toward the surface, thus forming a U-shaped tunnel. After the last stage of larval development, they form a pupal cell at the outer end of the tunnel near the surface of the wood. After pupation, the adult emerges by chewing a hole through the remaining wood and bark.



Figure 8 - 5



Figure 8 - 6

Family Scolytidae: Bark or Engraver Beetles (see also ch. 4) There are about 6,000 species described worldwide for this family. Two basic types of scolytids are recognized — 1. Ambrosia beetles, and 2. Bark beetles. Separation of scolytids into these two groups is based primarily on their behavior rather than on what they look like.

1. Ambrosia beetles — Scolytids with habits similar to those in the family Platypodidae living on fungi which line the walls of their galleries are also called Ambrosia beetles. Their life cycles, type of wood attacked and damage characteristics are similar. However, scolytid ambrosia beetles (and bark beetles) look very different from the Platypodid ambrosia beetles. Table 8 - 1 will allow you to distinguish between Scolytids and Platypodids. Like platypodid ambrosia beetles, scolytid ambrosia beetles will not reinfest seasoned wood.



Figure 8 -7

2. Bark Beetles — This group of scolytids (Fig. 4-13) are actual wood borers. Their larvae do not feed on ambrosia but live on wood, the majority tunnel into the bark, cambium, and / or wood of the host plant. Some are known to attack seeds, fruits, leaf petioles, twigs, etc. Their galleries are often complex, and some may be utilized to distinguish various species.



Figure 8 - 8

Some species have their heads partially visible from above, while in others it is concealed by the thorax. Bark beetles range in size from 1/50" to 1/2". These scolytids bore into both soft and hard woods. They utilize only unseasoned wood where the moisture levels are high. They do not penetrate very deeply into the wood. Generally their activity is confined to the bark or the area immediately underneath it. This area is the beginning of the sapwood.

Adults bore into the bark of a chosen tree and construct a long, straight tunnel. The eggs hatch and the larvae move laterally from the main tunnel. They feed on the wood as they move outwards. Frass is accumulated behind them as they progress away from their point of origin. A pattern of radiating side galleries away from the main tunnel is evident just under the bark (Fig. 4-14). These patterns vary with the bark beetle species. After pupation the new adults bore through the bark, fly away and attack other susceptible trees. Outdoors the life cycle usually is completed in less than one year, but when the wood is brought into a home, development may take a year or longer.

If the bark is still on the timber you will see the exit holes in the bark. Exit holes may be so numerous that the wood will appear to have been riddled with bird-shot. In

fact these beetles also have the name of “shot hole borers”. Entrance and exit holes are circular and are about 1/16" to 1/8" (1.6 mm to 3 mm) in diameter. If you peel off the bark you should see a pattern of tunnels etched into the sapwood. The pattern is unique for the species of bark beetle involved. What you will see is a long central tunnel from which lateral tunnels come off at almost right angles. These lateral tunnels increase as the larvae grow. When mature they pupate and the adults will emerge through the bark near the ends of their galleries.

If the adult beetles are found in a building look for firewood, which is usually the place they come from. If there is no firewood involved, look for wood that has bark still attached to it. Bark beetles will not infest structural wood.

TABLE 8 – 1 Comparison Between Adult Ambrosia Beetles

PLATYPODIDAE	SCOLYTIDAE
Body slender and elongate.	Body oval.
Head visible from above.	Head usually not visible from above.
Antennal club consists of one segment.	Antennal club with three to four segments.
Head wider than width of pronotum.	Head narrower than pronotal width.
First tarsal segment longer than the following four segments combined.	First tarsal segment smaller than the following segments.
Thorax constricted near its middle.	Thorax without constriction.

Family Curculionidae: Weevils

This is the largest family of animals known to man. Over 30,000 species have been described. Weevils are recognized by their elongate snout and elbowed antennae, and include many pests of stored food products. They are typically somber colored. Damage to wood may occur in wooden kitchen and pantry shelves and walls, and near dried, stored, vegetable or grain products. Damaged wood often has a surface honeycomb appearance. Frass may be powdery or granular, and tunnels are irregular. While the vast majority of weevils are plant feeders a few of them do attack wood and you may well find their damage during your inspections.

The adult weevils (Fig. 8 - 9) that bore into wood are about 1/8" to 1/2" (3 mm to 5

mm) long. Their color varies between reddish-brown to black. Their bodies are characterized by having numerous small pit-like depressions on the pronotum. Their elytra also have these pit-like markings, but they are arranged in a series of longitudinal lines running anteriorly to posteriorly. Their larvae are "C" shaped white grubs about 1/82" (3 mm) long when mature.

Both soft and hard woods, whether seasoned or unseasoned, are vulnerable and they can be found in both sapwood and heartwood. Usually wood that is in a high degree of decay from fungi is attacked. Some moisture is required for these insects if they are to successfully infest wood. Eggs are deposited either into cracks and crevices or into holes made by the female weevil. The larvae of some species tunnel parallel to the grain of the wood while others tunnel in all directions. The life cycle of the wood weevils is thought to be about one year.

The damaged wood in which you find them should show evidence of being or having been damp. Wood will appear similar to wood attacked by anobiids. There will be numerous galleries throughout the wood. They produce less frass than anobiids and their pellets are smaller and more circular than those of the anobiids. Exit holes are noticeably few. Apparently the weevils remain inside or beneath the infested wood. The exit holes you do find, will be slightly oval with margins that have ragged appearance. These holes measure 1/16" to 1/12" (1.5 mm to 2 mm). Weevils will continue to reinfest structural wood as long as a moisture condition and decay fungi exist in the infested wood.



Figure 8 - 9

Families Trogossitidae and Tenebrionidae: of the latter, including subfamily Alleculinae

& subfamily Lagriinae. Larvae are often found in rotten wood, in forest settings. Tenebrionids include the cadelle, the meal worm and the darkling beetle. Darkling beetle larvae will infest living and dead plant material. Larvae are hardened and suited for burrowing.



Figure 8 - 10

Family Colydiidae: cylindrical bark beetles: often found in galleries of wood-boring beetles, predators of scolytids and ambrosia beetles.



Figure 8 - 11

Families Cucujidae and Cleridae: prey on wood-boring beetles.



Figure 8 - 12

Family Lucanidae: Stag Beetles: larvae live in or beneath rotting logs, tree stumps, roots, and wooden posts



Figure 8 - 13

Family Passalidae: Peg or Bess beetles: adults and larvae live in well-rotted tree stumps and logs. Adults pack wood pulp into their galleries, which feeds the larvae.



Figure 8 - 14

Arthropoda: Insecta: Dermaptera: Earwigs find shelter in the wood and may actually eat some of the rotting material. These animals should not be a source of concern since they are usually in already decayed wood.



Figure 8 - 15

Arthropoda: Insecta: Lepidoptera: Cossidae: Carpenter worm moths are known to infest living trees. They seldom seriously damage the tree. Normally, they are not encountered indoors, but the possibility does exist that if they are close to completing their life cycle they could emerge inside a building. Examples of these moths are:

1. The leopard moth (*Zeuzera pyrina*) occurs throughout the Northeast. It infests many trees particularly elm, maple, ash, beech, walnut, oak and poplar. Their life cycle requires 2 years for completion.



Figure 8 - 15

2. The pecan carpenter worm (*Cossula magnifica*) favors pecan, oak and hickory trees. This moth is widely distributed in the United States. In the northern United States it may require 3-4 years to complete its development.



Figure 8 - 16

3. The little carpenter worm (*Prionoxystus macmurtrei*). This moth inhabits eastern Canada and the eastern part of the United States. During their first summer the larvae feed within the outer bark layers. The second summer they inhabit the sapwood, and during the third summer they excavate deeper in the woody part of the tree. They exist as pupae during the third winter in their galleries.



Figure 8 - 17

Arthropoda: Diplopoda: Millipedes can be found in rotting wood and they can actually feed on the wood, however, they require rotting and damp wood. Millipedes have two pairs of legs on each body segment.



Figure 8 - 18

Arthropoda: Chilopoda: Centipedes may also be seen in damp wood galleries. They feed on any animals that may be living in the wood and have one pair of legs per body segment.



Figure 8 - 19

Arthropoda: Crustacea: Isopoda: Sowbugs, although they are plant feeders, could be in wood because of moisture that they require, and will feed on wood in the last stages of decay.



Figure 8 - 20

Mollusca: Pelecypoda: Eulamellibranchia: Teredinidae

Shipworms / Teredos – marine bivalves that burrow into wet wood, and line it with a

whiteish, calcareous coating. The gallery serves to protect them from predators. They may grow up to 2 feet long. Depredations to piers, pilings, and ships' hulls are extensive and possibly threatening to structural integrity. It typically attacks submerged wood. Its presence in structural timbers suggests wood from "cull" sources. Once out of the water, it dies. Reinfestation is not an issue in dry conditions. It does consume wood fibers.



Figure 8 - 21