

Timber borers in Queensland houses

protecting timber, buildings and furniture

Timber borers 2

Many householders in Queensland find that they need to know something about borers or termites. This may be because they are buying or building a new house and want to avert potential problems. Not all damage observed necessarily indicates a cause for concern, for example, some insects damage unseasoned ('green') timber but activity ceases when the timber has seasoned ('dried'). On the other hand, some insects can cause extensive and continuing damage and can be difficult and expensive to control. A basic knowledge of the various insects and their habits is therefore essential before any treatment is attempted. Fortunately, the subject is less complicated than many people realise.

Insect pests of timber may be divided into three groups:

- borers that damage unseasoned timber
- borers that damage seasoned timber
- termites

This fact sheet describes the insect borers in timber commonly encountered in Queensland. It contains sufficient information for making general identifications and understanding the significance of the damage being observed. The individual pests and their damage, including termites, are described more fully in separate leaflets. These should be consulted when a more detailed knowledge is required.

How borers work

The wood from a freshly cut tree is referred to as being 'green'. A living tree, and the green timber cut from it, has high moisture content. At this stage there is a wide range of borers that may damage it. When the tree is cut and sawn, the wood begins to dry out. As the moisture content drops, the wood goes through various stages where it becomes too dry for the insects that damaged it when it was green, but it becomes susceptible to damage by a different group of insects. Eventually the moisture content becomes stable (at around 10 to 15%), and

the wood is said to be 'seasoned'. Slow seasoning will occur naturally if the timber is protected from the weather, or it can be done more quickly at the sawmill.

Although moisture content is important in determining which insects can damage a certain piece of timber, the type of timber is also important. Timber can be classified as either 'hardwood' or 'softwood'. Pines are often referred to as 'softwood' but this can be confusing, as many hardwoods are also quite 'soft'. (To be strictly correct, the pine group consists of some members of the conifers). Generally, borers that damage hardwoods, don't damage softwoods, and *vice versa*.

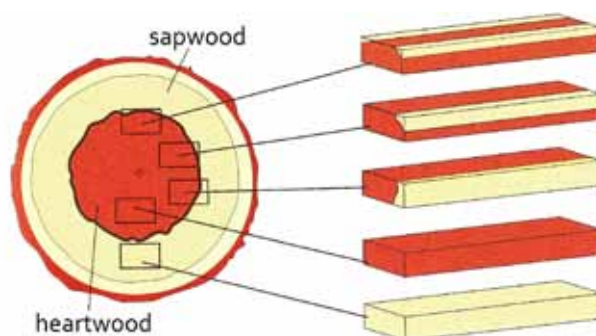


Figure 1. Cross section of log showing sapwood and heartwood, and timber cut from it with various sapwood / heartwood configurations.

Furthermore, most borers damage only 'sapwood' and not 'heartwood'. Figure 1 shows the cross section of a tree, with sapwood and heartwood (truewood) zones marked. It also shows how a log might be sawn to result in different amounts of sapwood occurring in the finished boards. As the tree grows in diameter, new sapwood zones are formed on the outside, and the inside sapwood turns to heartwood. Sometimes the sapwood is lighter in colour than the heartwood, making it readily distinguishable.

Most borers are beetles and it is the larval stage, or grub, that does the damage. Beetles have four life stages; egg, larva, pupa and adult. Most commonly,

eggs are laid in the timber by adult beetles, larvae hatch.

They eventually pupate, and new adults emerge making the holes on the surface of the timber. Therefore, most of the surface holes in timber are the result of beetles boring out, not boring in, and are called emergence holes.

Borers that damage unseasoned timber

A wide range of insects can damage trees or logs, but not seasoned timber. Of course, the damage caused by these insects is still apparent when the timber has seasoned and activity ceased. Therefore, it is necessary for the householder to be able to recognise the damage caused by pests in this group, and to distinguish it from that of more serious pests.

With new houses, framing and some other timber will sometimes have a fairly high moisture content at the time of construction, so pests in this group might still be active until the timber dries, when the problem will cease of its own accord. The situation is complicated however, because sometimes not all larvae die as the timber seasons. Larvae may continue to bore, although at a reduced rate, for some time, eventually pupating and emerging as adults. Thus emergence holes may suddenly appear in houses even years after construction.

Adults often emerge through lining materials, causing concern. They cannot, however, re-infest, so treatment is not warranted and all that is necessary is to repair the damage.

To determine whether borer damage occurred before or after the log was sawn, the following point is useful. Insects that bore a tunnel with a round cross-section also have round exit holes, and if a saw passes through such a tunnel at an angle the hole on the sawn surface will be oval shaped. Therefore, oval holes from round tunnels probably were caused by insect damage before sawing. In some cases the saw may pass through the tunnels longitudinally, leaving a trough-like depression on the surface of the board.

Insects that damage unseasoned (but not seasoned) timber can be divided into four groups.

Longicorn and jewel beetles

These borers have emergence holes that are usually irregular or oval-shaped and sometimes with



Figure 2. Adult hoop pine jewel beetle emerging from hoop pine timber.

relatively rough edges. Holes can vary in size from only a few mm to a centimetre or more, but are always much bigger than those of powderpost beetles or Queensland pine beetle (see following section). The tunnel usually approaches the emergence hole at an angle. A soft granular powder, called 'frass', is often present. Both hardwood and softwoods can be damaged, and it is not uncommon for one or more of these insects to emerge from the timber some time after it is sawn (Figure 2).

Auger beetles

Emergence holes of these borers are very neat and round, and may vary from 3–6 mm in diameter. Both adults and larvae tunnel in the timber. The frass is very fine and powdery, similar to that of powderpost beetles. Auger beetle damage can be distinguished from that of powderpost beetles because of the larger holes. On rare occasions adult auger beetles will bore into seasoned timber or fully preservative-treated timber to lay eggs, but the larvae will not survive and no treatment is necessary.

Ambrosia beetles ('pinhole borers', 'shothole borers') and pinworms

Emergence holes are very similar to those of powderpost beetles, but the tunnels and edges of holes often have a blackish staining, and the tunnels are free of any frass. Ambrosia beetles are unusual in that it is the adults that do the boring and the larvae feed on fungus growing in the tunnels.



Weevils and wood moths

Tunnels of varying sizes can be found in heartwood or sapwood of both hardwoods and softwoods. A stringy, sawdust-like frass may be present and is often compacted in the tunnels. Tunnels are usually much larger than those of either powderpost or Queensland pine beetles.

Borers that damage seasoned timber

Pests that can damage seasoned timber causing structural damage are of main concern to the householder. There are only two such borers of significance in Queensland.

Powderpost beetles

commonly *Lyctus brunneus*

These borers damage only the sapwood of some hardwood timbers. they do not damage truewood of hardwoods, and do not damage softwoods. Timber is most suitable for infestation soon after it has been harvested and sawn, but damage may not become obvious until the first adult beetles emerge several months later.

Damage is indicated by small round holes up to the size of a pinhead (1.5 mm) in the timber, with a fine floury frass coming from the holes. The presence of frass and the small emergence holes (Figure 3), distinguish this pest from other insects discussed in the previous section. These borers can continue to reinfest timber until all the susceptible sapwood is destroyed. But, as shown in Figure 1, many pieces of timber cut from a log will contain no sapwood or very little sapwood.

To control active powderpost beetle infestations one of the following options may be appropriate depending upon the circumstances:

- replace timber, e.g. for infestations in fence palings or mouldings;
- remove the sapwood, e.g. for infestations in parts of bearers or joists; and
- treat with insecticide, e.g. in situations where other options are not suitable, like an infested exposed ceiling beam. Liberal applications of suitable oil-based insecticide to bare, unpainted timber will usually control damage by powderpost beetles and prevent reinvasion.



Figure 3. Larvae of powderpost beetles can reduce susceptible timber to a fine flour-like powder.

In other cases where only very small amounts of sapwood are involved or when further damage is unlikely, no control action may be warranted.

Queensland pine beetle

Calymmaderus incisus

This borer is common only in the south-eastern part of the state. It damages the sapwood of the hoop and bunya pine group of timbers. It does not damage heartwood, hardwoods or cypress pine, and rarely exotic pines (slash, radiata, etc.). It is a very slow working insect, and may take many years to cause extensive damage. Emergence holes are round, fairly uniform in size, and slightly smaller than an average pinhead. A fine, granular frass may come from the holes.

Susceptible timber, if left untreated, will be reinfested until it is completely honeycombed and has lost most of its strength (Figure 4). It is most commonly found damaging pine floors and walls, but it is rarely found in roofing timbers. Typically, only some boards, or zones within boards, are damaged. The beetles emerge mainly from the underside of floors, so that boards which appear quite sound from the top may be riddled with holes underneath.

Whether treatment is required or not depends on the particular circumstances. Painted timber is virtually immune from re-infestation provided all surfaces are painted, and should not require any further treatment. Boards with a large number of emergence holes should be replaced, preferably with pre-treated timber. If only a few holes are present, unpainted surfaces can be treated with a suitable oil-based insecticide. An alternative is to use water-based



Figure 4. Larvae of the Queensland pine beetle can reduce susceptible timber to fine gritty cigar-shaped pellets.

persistent insecticides, but in this case treatment should be done in June or July, and repeated each year for three years. To ascertain if an infestation is active, small areas can be marked out at random on infested boards, and all the holes marked. If any new (unmarked) holes appear in these areas within the next twelve months, the infestation is active and should be treated.

Note that a closely-related beetle, the furniture beetle *Anobium punctatum*, is established in south-eastern Queensland may be found damaging a wide range of timbers. Treatment is the same as for the Queensland pine beetle.

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Source

Peters, BC, J King, & FR Wylie. (1996) *Pests of Timber in Queensland*. Queensland Forestry Research Institute, Department of Primary Industries, Brisbane, 175 pp. Available from the Queensland Government Bookshop: www.bookshop.qld.gov.au

More information

Queensland Primary Industries and Fisheries

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