House Borer (sometimes called household borer)

Insect: *Anobium punctatum* (De Geer) (Coleoptera: Anobiidae)

Based on G.P. Hosking (1978)

![Image of house borer damage to rimu timber.](image)

**Fig 1 - House borer damage to rimu timber.**

**Type of injury**

The house borer is capable of causing severe damage to untreated dry timbers used in buildings and furniture. The larvae prefer to feed on the sapwood although some instances of damage to heartwood have been recorded. In the forest the insect breeds in dead parts of trees and in logs. The initially distinct network of larval tunnels within the wood coalesces as the infestation progresses, and the wood structure is eventually destroyed (Fig 1). The loosely packed bore dust has a gritty feel when rubbed between the fingers. It may be seen dribbling from the small (1-2mm in diameter) round exit holes, having been dislodged by the emerging beetles, by parasites of the insect, or by simple vibration.

**Hosts**

A wide range of both native and exotic hardwoods and softwoods are recorded as hosts. Three commonly attacked species are *Dacrycarpus dacrydioides* (kahikatea), because of its superior nutritional properties, *Dacrydium cupressinum* (rimu), and *Pinus radiata* (radiata pine) owing to their extensive availability. *Pseudotsuga menziesii* (Douglas fir) and *Thuja plicata* (western red cedar) building timbers suffer very little damage. Normally only the sapwood of host species is susceptible.

**Distribution**

This insect is found throughout temperate regions of the world, including New Zealand.
**Economic importance**
This borer is responsible for most of the insect damage found in structural and decorative timber in New Zealand. Infestations may occur in untreated timber used for almost any purpose including structural timbers, exterior cladding, joinery, furniture, and flooring. In mild infestations damage is superficial and is important only where finished surfaces are marred by the appearance of exit holes. However, repeated reinfestation may result in the complete failure of the attacked timbers.

Infestations were common in houses constructed of untreated wood, but the universal use of preservative treated timber has greatly reduced the incidence of this insect. High temperature kiln dried wood may be less susceptible to attack for a few years, but should not be regarded as an adequate substitute for H1 treatment.

**Description, life history, and habits**
The beetles are 2.5 to 5mm long and reddish to blackish brown. The body is basically cylindrical, the prothorax forming a deep hood which completely covers the head from above (Fig. 2). The slender antennae are about one-third as long as the body and the three terminal segments are slightly flattened. The upper surfaces of the body are clothed in short, fine, yellow hairs which on the elytra (wing cases) are between rows of well-defined punctures. Females are usually larger than males.

![Fig. 2 - House borer adult, top view and side view. Note how the prothorax forms a hood over the head.](image)

The larva is a small (up to 7mm long) creamy-white, C-shaped grub (Fig. 3). The head is yellow-brown with dark jaws. The thoracic segments are larger than the abdominal ones and have a distended appearance. Each thoracic segment is divided into a number of folds. The legs are short but well developed. The first eight abdominal segments are divided into a number of folds similar to those of the thorax. Bands of small spines are present on top of the rear thoracic segment and the first seven abdominal segments.
The adult female lays small white eggs on rough-sawn surfaces, in cracks and crevices, or in old exit holes. They hatch in 4 to 5 weeks and the larvae bore down into the wood after first taking a bite from the upper part of the egg shell, upon which the female has deposited yeast cells. These symbiotic yeasts enable the insect to convert cellulose to protein, a process further assisted by the secretion of an enzyme which breaks down plant cell walls to simpler sugars.

The larvae feed within the wood (Fig. 4) and develop fastest at relative humidities over 70% and temperatures between 220 and 23.5°C. The fully developed larvae excavate small chambers free from bore dust just below the surface of the wood, in which they pupate. The pupal period lasts from 4 to 8 weeks, after which the adult bores to the outside making a circular exit hole (Fig. 5). Under normal conditions the time from egg to adult is 3 years in kahikatea sapwood and 4 years in the sapwood of rimu and radiata pine. The rate of development is influenced by temperature, moisture, and nutritional properties of the wood.
Adults may be found from November to January, and live for up to 4 weeks. They do not feed. In laboratory experiments some females have laid more than 100 eggs each, but in natural conditions considerably fewer may be produced.

**Control**

The most satisfactory treatment is the replacement of affected timbers with preservative-treated wood. Where this is impractical, infestations may be destroyed by fumigation with methyl bromide, but reinfestation can occur as soon as the gas has dissipated. Such fumigation can be done only by a licensed operator. Treatment with a contact insecticide with good residual activity is desirable after fumigation.

Currently available and recommended insecticides for treatment are the synthetic pyrethroids permethrin and deltamethrin, and the organophosphate pirimiphos-methyl. Permethrin should be diluted to 0.1% active ingredient, deltamethrin to 0.05% a.i., and pirimiphos methyl to 0.5% a.i., using an organic solvent. Flood spraying with dieseline, kerosene, or mineral turpentine is likely to be only partially effective unless repeated applications are made for at least 5 years to all surfaces of the affected timber. Insecticidal strips and smoke generators act only against emerged beetles and have no effect on the larvae within the wood.

In New Zealand larvae of the house borer have been found to be parasitised by a braconid wasp *Spathius exarator* (Linnaeus), a pteromalid wasp *Theocolax formiciformis* (Westwood), and a mite *Pyemotes ventricosus* (Newport), but it is not known to what extent these limit numbers of their host.

**References**


