

# INFORM

INFORMATION FOR HISTORIC BUILDING OWNERS

**Insect  
attack to  
timber**



## Introduction

From earliest times timber has been used as a component of traditional buildings in Scotland. It can be found in almost all elements including floors, walls, windows, doors and roofs. A variety of factors can lead to its break down and decay, including attack by insect pests. Insect attack to wood is a problem which causes considerable concern in the mind of building owners, and is also one of the least understood decay mechanisms which can affect timber. This INFORM seeks to guide building owners through identification of an insect problem, and how best to end such an attack in a safe, effective and economic manner.



*Fig 1: Wood damaged by furniture beetle*

## Understanding the life cycle of wood-boring insects

When dealing with an infestation it is important to have an understanding of the life cycle of wood-boring insects. The three stages of development of these insects are:

- An egg, which is laid in timber
- A larvae, which feeds on timber
- A winged insect which emerges from the timber to lay further eggs

It is not the insect in its winged state which causes damage but rather the larvae which feeds on timber before emerging in this winged state. The holes which can be seen in timber following attack by insects are the flight holes caused by the winged insect emerging. Larvae can exist in wood for up to 10 years, it is therefore vital when considering treatment options to target not only the winged insect but the larvae and eggs which will thrive in timber as long as conditions are conducive. The most effective long term cure is to remove the conditions which allow egg, larvae and insect to survive.

## Identifying the insect

As there are a number of insects which can attack wood correct identification of which pest is present will assist its proper eradication. The following are the most likely insects to damage timber:



*Fig. 2: Bore dust of the common furniture beetle*

### **Common furniture beetle**

Commonly known as woodworm, the common furniture beetle is the most likely insect to threaten timber in Scotland. The beetle can be identified by the round holes which they produce in timber and the egg shaped pellets of bore dust they leave. The damage is caused by the larvae that, after hatching, bore into wood in search of nutrition. This larval phase can last for up to 3 years, therefore, if left unchecked, considerable damage can be caused to structural timber. Where moisture content is below 12% it is hard for the larvae to survive. Conversely, where moisture content is high, and especially where rot has already occurred, timber is particularly vulnerable to attack. Sapwood (the outer section) of soft wood trees such as pine spruce and fir is especially prone to infestation. A serious outbreak of furniture beetle larvae can cause severe damage and when coupled with rot, could well require replacement of timbers.



*Fig. 3: A common furniture beetle (measuring 0.5 cms long)*

### **Death watch beetle**

This beetle is uncommon in Scotland but can still be found on occasion. This species can be identified by the larger holes which they leave in timber (around 3mm in diameter). It attacks wood that has experienced some form of decay or rot in the past. As with the furniture beetle, it is the larvae which cause damage, and they can exist in that stage for as long as 10 years. They are particularly prone to attack built-in sections of timber where ventilation is poor and can thus remain undetected for some time. An extensive infestation can cause structural failure in timber.

### **Wood-boring weevil**

Wood-boring weevils attack damp timbers especially where they are also suffering from decay. It is important not to mistake wood-boring weevils for common furniture beetles. The holes made by weevils are oval shaped (as opposed to the round holes of the furniture beetle) with finer bore dust.

Once moisture is removed from wood, and any decay dealt with, the weevil infestation will cease without the need to resort to the use of chemicals. This principle largely applies to all insect infestation.

### **Powder post beetle**

These beetles most commonly attack new timber, hardwoods and building elements such as flooring. It can also attack existing building elements if the conditions are right. It produces a very fine bore dust, and holes around 2mm in diameter.

### **Treatment of insect attack**

There are two main ways of eradicating an insect pest: environmental control and chemical treatment. Allied to both are various post treatment actions which should be carried out once the pest is eradicated.

### **Environmental control**

As with rot, the most effective long-term strategy when dealing with an attack is to remove the conditions which allow the insects to thrive in the first place. The easiest way of making such a change is to reduce the moisture content of the timber and the area adjacent to it. This can be achieved in a number of ways including the introduction or reinstatement of ventilation, removal of sources of moisture such as defective gutters, leaky roofs or pipes and in some cases artificial drying. A further environmental control is to ensure that any timber which is affected by rot is removed and replaced. Rotten timbers are far more susceptible to insect attack than sound wood.



*Fig. 4*



*Fig. 5*



*Fig. 6*

*Figs 4 – 6: The most effective form of treatment of insect attack is the removal of sources of moisture such as defective gutters, leaking pipes or slipped slates.*

## Chemical treatment

Whilst environmental controls are the most effective way of ridding a building of insect pests in the long term, it may be necessary to use chemical treatments to help eradicate outbreaks in the first instance and to stop established insect pests causing further damage. There are several different methods of application. Whatever method is used it is important to bear the following points in mind:

- The application must bring the treatment into sufficient contact with the insect to ensure that enough are killed to make the colony unviable.
- If an infestation only affects a localised area of a building the treatment should be targeted to that area. In most instances insect infestation is a localised problem therefore large-scale treatment, is unlikely to be required.
- It is important to identify the species of insect being treated to ensure the correct treatment is being used.
- Ask if the contractor carrying out the work has been properly trained. Although there is no legal requirement for this, it is important to ensure that the workforce is competent.

- You should always ask what chemicals are going to be used and check these for any dangers to health such as skin or eye irritation. If these are likely hazards enquire as to how long the treated area will have to remain vacated following treatment. All chemicals being used should be approved by the Health and Safety Executive.
- Ensure water tanks are completely sealed to avoid contamination.

## Methods of application

### Spraying

Spraying an agent onto the surface of wood is unlikely to be fully effective against some species of pest but will be more effective against furniture beetle. To maximise the surface retention of sprayed treatments the applicator nozzle should be kept close to the wood being treated and the chemical dispensed at a relatively low pressure.

### Injection

A more effective method than spraying is injection of the treatment into wood. This is more likely to ensure that the agent penetrates deep enough into the timber to kill the majority of insects. It may be necessary to drill small holes in



*Fig 7: Timber previously attacked by rot is particularly vulnerable to insect infestation*



*Fig 8: Replacement of decayed timber*

the timber to ensure effectiveness, where this is the case these should be made in as unobtrusive a location as possible and filled afterwards. An alternative to this approach is to inject the treatment into the flight holes.

### **Paste**

The application of paste treatments is likely to ensure deeper penetration of the chemicals they contain and be more effective than spraying.

### **Smoke treatment**

Smoke treatment is only likely to be successful against emerging adult insects, not in eradicating eggs or larvae within the timber. This treatment will therefore have to be repeated over several years in order to completely eradicate the pest and is therefore unlikely to be an effective option.

### **Fogging**

Particularly used where large areas are to be treated, the fogging of chemical treatment is designed to target eggs. Whilst fogging may have some limited success it is unlikely to be able to reach the eggs which are laid in hard to reach areas and several applications may be required. Both fogging and smoke treatment have the disadvantage of being much less specific than injection or spray applications.

## **Post-treatment actions**

After an infestation has been treated it is important to take certain remedial actions to ensure re-infestation does not occur including:

- Ensure all severely damaged or decayed timber is replaced following treatment. This is not only vital to maintaining the integrity of the building, decayed timber is also more likely to encourage future insect attacks.
- Ensure that any sources of moisture and damp are removed. This will also improve the general health of a building, and make re-infestation less likely. Pest control without adequate remedial work to cure moisture and damp ingress is unlikely to be successful in the long run.
- It is also worth monitoring a previously affected area after treatment to ensure that a pest has been eradicated completely. If there is continued evidence of insect activity further environmental controls or limited applications of chemical treatment may be required.

### **Further Reading**

Ridout B., *Timber Decay in Buildings* ISBN 0-419-18820-7  
Glasgow West Conservation Trust Guide 7 *Rot and insect infestation*  
English Heritage Guide, *Insect Pests in Historic Houses*

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