Dealing with woodworm

Framers do not need to be alarmed about woodworm as long as they have a basic understanding of the potential problems and they – and their suppliers – are taking sensible precautions in the workshop, says specialist timber consultant **Nick Clifford**

The large volume of timber framing and mouldings used by the art industry inevitably carries a risk of wood-boring insect damage, widely referred to as woodworm. Disposal of affected timber and expensive pesticide treatments are the most common courses of action taken by suppliers to combat woodworm. However, in many cases these are not needed. A greater understanding of the problem by the industry could help to avoid a recurrence of infestations, and minimise costs when woodworm issues arise.

Many believe that woodworm infestations can quickly spread and that all timber is at risk from an infested batch. A closer look at the insects involved indicates that this is rarely the case. Few species are able to attack processed timber and initiate a sustainable population; such species are very selective in terms of the type of wood that is vulnerable and the conditions required for an attack.

Identifying the culprits

The term 'woodworm' technically applies to the common furniture beetle (anobium punctatum) only, but is often used to describe damage by any wood-boring insect. With regard to woodworm problems in the art industry, the two most likely culprits are lyctus powderpost beetle (lyctus brunneus and lyctus linearis), and common furniture beetle (anobium). Distinguishing between lyctus and anobium can be difficult, so identification is best left to the experts. However, it is important to understand the differences between these beetles in order that suitable courses of action can be taken when infestations occur.

Lyctus are found in the sapwood of tropical and European hardwoods with large pores. They do not attack softwoods. Therefore softwoods (pine, spruce, larch, douglas fir etc) are not at risk from lyctus infestation, so disposal or treatment (fumigation etc) of softwood framing or mouldings that have been stored with lyctus infested hardwoods would be money wasted. Hardwoods with small pores and/or low starch contents (beech, cherry, maple, walnut) are also not vulnerable to lyctus. Anobium attack the sapwood of softwoods and European hardwoods but are very rarely found in tropical hardwoods. A basic knowledge of the types of wood that are vulnerable to the specific insect, and those which are not, can therefore avoid unnecessary pesticide treatment or disposal.

An equally important factor with regards to lyctus and anobium is that these insects attack the sapwood only (in the absence of fungal decay). They do not attack the heartwood. Therefore only pieces containing sapwood are vulnerable to attack. For many timber species, there is a distinct colour variation between heartwood and sapwood. An infested batch may well contain many pieces that comprise heartwood only, so disposal of the entire batch may not be required after a simple visual assessment. However, some commonly used tropical hardwoods such as obeche/ayous (triplochiton scleroxylon) have little or no colour variation between heartwood and sapwood. In this case, disposal of an affected batch may be the best option.

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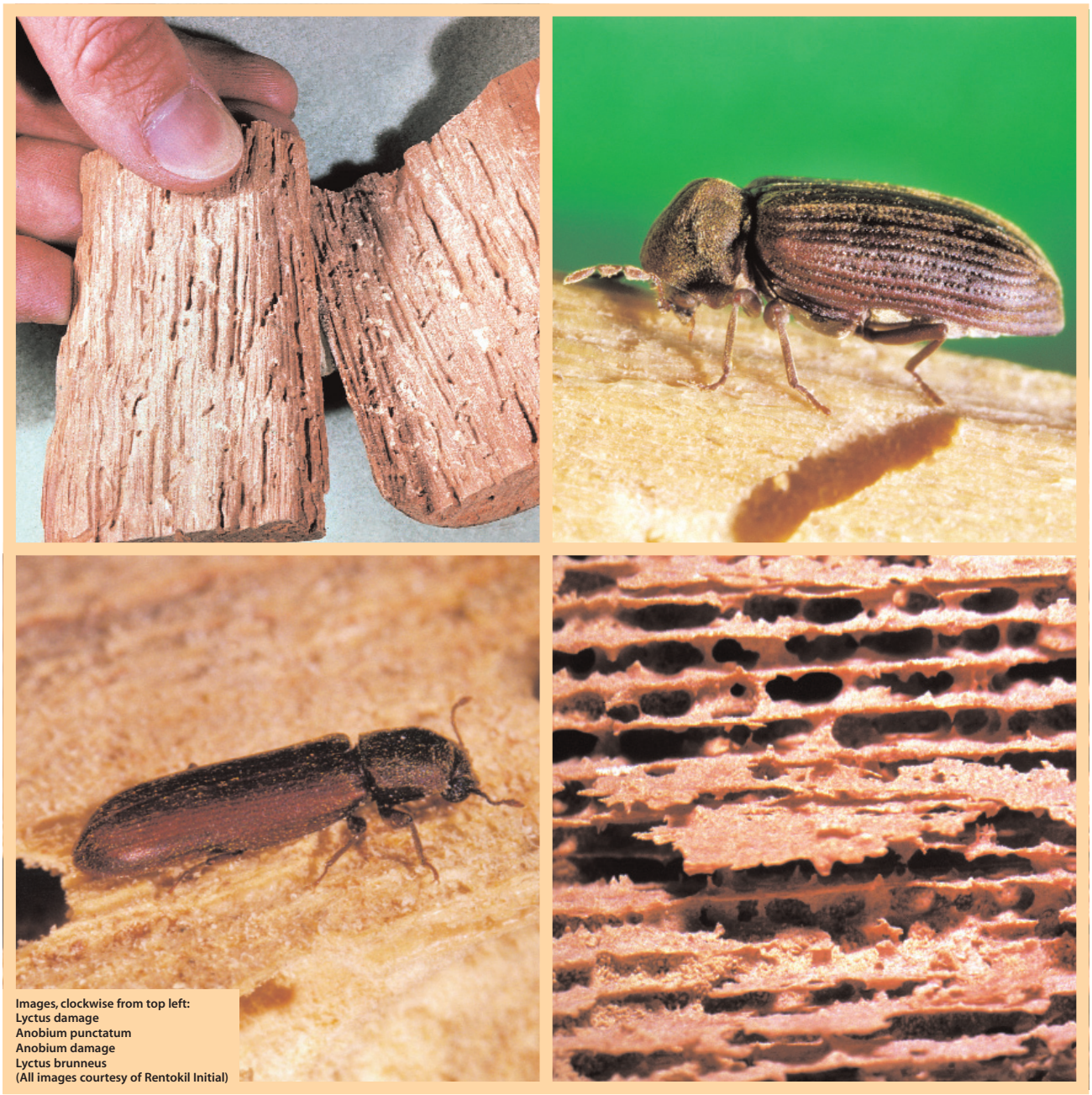
Moisture content

A critical aspect of woodworm infestations is the level of moisture in the wood. Virtually all the timber used by the industry has been kiln-dried prior to supply, but it is a popular misconception that kiln-dried timber is not at risk from woodworm. Claims that an infestation cannot have originated in a particular batch because the timber is kiln-dried are simply not accurate. It is true to say that it would be expected to kill adult beetles or larvae within the timber at that time, but kilning offers no protection against future infestations. Indeed, lyctus powderpost beetle infestations nearly always originate in stockyards or stockrooms, many of which contain only kiln-dried timber.

Typically timber is kiln-dried to a moisture content of 14 to 16 per cent, and the heat from the kilning process kills the insects. However, after kilning the timber still contains enough moisture to support woodworm activity, so the possibility of a future attack remains. In order to ensure that the wood is too dry for woodworm attack to occur, it would need to have a moisture content around 11 per cent or less. This can easily be achieved by kilning, but it is important to remember that timber can subsequently pick-up moisture from the



Images, clockwise from top left:
Lyctus damage
Anobium punctatum
Anobium damage
Lyctus brunneus
(All images courtesy of Rentokil Initial)

atmosphere, thereby increasing the moisture content to over 11 per cent and once again leaving it vulnerable to woodworm attack. Moisture impermeable protection is therefore needed after kilning, and shrinkwrap is often used for this purpose. If the framing and mouldings industry specified that its timber was supplied shrinkwrapped, and at a moisture content of ten to 11 per cent, then the risk of any problems with woodworm would be significantly reduced. This could also improve performance in service as this moisture content range happens to match that which most mouldings and framing would be expected to reach in a heated building, for example a home, gallery or museum, so problems with shrinkage /expansion would be minimised.

Closer specification of orders from suppliers can be a very straightforward way of avoiding problems with woodworm. When placing orders, consideration should be given to specifying heartwood only, with sapwood excluded. This alone would avoid woodworm attack for those species where colour variations make the distinction easy to spot. Additionally, a specification for timber to be supplied at a moisture content of ten to 11 per cent (and shrink-wrapped) would further reduce the risk of attack, even for species where sapwood/heartwood cannot easily be visually identified.

Finding an infestation

It can be difficult to establish the origin of an infestation, given the many links in the supply chain. However, knowledge of the life-cycle of the insects can help. Woodworm holes are not caused by beetles boring into the wood, but by adult beetles emerging through the surface towards the end of their life-cycle. Typically this occurs three to five years after infestation (ie when the eggs were laid on the surface of the wood by a female adult beetle). So, if adult beetles were found emerging from stock that was supplied say one year ago, then the infestation cannot possibly have originated in that stockroom, but must have been present when the timber was ➔

supplied. Records of when infested stock was supplied could therefore be very useful in excluding your stockroom as a possible source of the infestation.

Control of environmental conditions in storage areas can also reduce the risk of woodworm attacks. Temperature and (to a greater extent) relative humidity (RH) of storage areas influence the equilibrium moisture content (EMC) of timber (ie the moisture content that the timber will achieve over time when stored in particular environmental conditions). It is possible to control temperature and RH such that people can work in a storage area without discomfort, while encouraging the stored timber to achieve an EMC of 11 per cent. This is too dry to support woodworm activity, and over time would be expected to kill any insects living within the timber. Timber stored in these conditions for a prolonged period would become too dry for woodworm, and would therefore not be vulnerable to stockroom infestations, even if a recently supplied infested batch was stored nearby. It's a fair bet that most traders in the art industry timber supply chain have little or no control over the environmental conditions in their storage areas. It may be that environmental controls are not considered cost-effective, given that woodworm infestations appear to be relatively infrequent in the industry. However, it would be advisable to take all possible steps to prevent woodworm problems, not only to avoid customer dissatisfaction, but to minimise the risk to stock and to keep costs down when infestations occur.

Monitoring woodworm activity can be achieved relatively easily. Regular checks for live beetles and fresh bore-dust is the first step. Sticky fly-paper type traps can also be useful

Monitoring for signs of woodworm activity can be achieved relatively easily. Regular checks for live beetles and fresh bore-dust are the first step. The use of sticky fly-paper type traps can also be useful. These attract and trap numerous insects including adult woodworm beetles, and can prevent emerging females from laying their eggs. The sticky traps may be checked periodically for any woodworm beetles. Ultra-violet insect-o-cutor type electrical traps (of the sort commonly used in butchers shops and other food outlets) can also attract and kill woodworm beetles. These simple monitoring techniques increase the chance of detecting woodworm problems sooner rather than later, or provide greater assurance that there are no woodworm problems in a storage area.

Improved awareness of the insects responsible for an attack and the types of wood vulnerable to a particular species, the conditions required for an attack (sapwood, enough moisture etc), closer specification of timber supplies, better environmental control of storage areas, and increased monitoring are all tools that the art industry timber supply chain can use to avoid woodworm problems.

A little knowledge can go a long way, so if you get woodworm in the future, avoiding unnecessary disposal or pesticide treatment could be simple, so don't let profits turn to dust.

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Anobium larva (Image courtesy of Rentokil Initial)

WOODWORM & OLD FRAMES

The re-use of frames in the industry can give rise to concerns about the risk of infestation from old frames. Although many old picture frames have woodworm damage, it does not mean that they contain an active infestation. In most cases the damage will have occurred and died out in the past. However, a degree of risk remains that the timber could contain an infestation in the sapwood. For example if a frame has been hung on a damp wall or stored in a damp outbuilding it could contain enough moisture to support woodworm activity.

A simple answer would be to apply a proprietary woodworm killer to all surfaces. This would be the most cost-effective approach in most cases. To be sure that any coatings (paints, varnishes etc) will not be damaged by the water-based or solvent-based insecticide, it is sensible to carry out a trial on a small or unobtrusive area of the frame.

If volumes are great enough, a humidity-controlled heat-treatment could also be an option, and there are various specialist companies offering this service. The frames are heated for a prolonged period, to kill any ongoing infestation. Controlling humidity in the treatment chamber avoids shrinkage, and thereby minimises joints opening up. This treatment can damage some types of varnishes, lacquers and other coatings, so if any coatings are important, this should be discussed before treatment.