

Tree pests and diseases: wake up and smell the coffee

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New pests and diseases attacking amenity and forest trees are being reported with alarming regularity. The latest at the time of writing is *Chalara fraxinea* on ash (see p. 7), but by the time this is published there may be others.

With a series of new actions and initiatives it does seem as if some sections of the tree industry are indeed 'waking up and starting to smell the coffee'. However, have we really learned sufficiently from past



Asian longhorn beetle.

experiences of dealing with invasive pests to react quickly and efficiently enough now? And are we ready to embrace opportunities with new techniques and new technology to stem the invasions?

The situation has undoubtedly become very serious, so much so that some initiatives have started. For example, the London Tree Officers Association (LTOA) has begun a project to map the occurrence of pests and diseases across the capital; Forest Research and FERA are developing a new partnership and collaboration called 'The Tree Project' that is focused on establishing an integrated 'real-time' tree health surveillance system for the UK; and the Institute of Chartered Foresters (ICF) hosted a meeting of 'major forestry players' in the battle against disease imports.

The reality is that many, if not all, of the pests and diseases these initiatives are discussing have already become established and are here to stay, for example:

- *Phytophthora ramorum* and other *Phytophthora* species;
- oak processionary moth, *Thaumetopoea processionea* – recently reported from east London, so it looks like it is spreading rapidly;
- gypsy moth, *Lymantria dispar* – an import from Europe and populations are prone to increase and decrease rapidly;
- Asian longhorn beetle, *Anoplophora glabripennis* – has the exclusion zone in Kent contained it?
- horse chestnut leaf miner, *Cameraria ohridella*;

- ash decline/dieback, *Chalara fraxinea*;
- acute oak decline;
- the great spruce bark beetle, *Dendroctonus micans*;
- the aggressive strain of Dutch elm disease, *Ophiostoma novo-ulmi*.

Established pests, such as pine red-band needle blight (*Dothistroma septosporum*), have become more damaging, possibly in response to more favourable environmental conditions.

All of these represent a 'Clear and Present Danger' to our amenity trees, forests and woodland, which is repeatedly being highlighted in the media (e.g. *Sunday Times* 07/10/2012). We have to learn to live with them and to control them using all means open to us. We cannot just ignore them and hope they will go away; they won't – Dutch elm disease didn't!

The current attempts to control Asian longhorn beetle echo the early attempts to control Dutch elm disease (DED) – the legacy of which is still so disastrously evident in the landscape. The tree industry as a whole, i.e. both arboriculture and forestry, needs to wake up and decide to deal proactively with these threats.

Other threats

There are other serious threats on the horizon, for example

- emerald ash borer (*Agrilus planipennis*)
- birch borer (*Agrilus anxius*)
- spruce bark beetle (*Ips typographus*)
- chestnut blight (*Cryphonectria parasitica*)
- pitch pine canker (*Gibberella circinata*)
- brown-spot needle blight of pine (*Mycosphaerella dearnessii*)
- pine processionary moth (*Thaumetopoea pityocampa*)
- citrus longhorn beetle (*Anoplophora chinensis*)

All have the potential to cause devastation to our trees, forests and woodland. Emerald ash borer in particular can devastate the ash population, if the situation in other countries is anything to go by, and as if *Chalara fraxinea* was not enough. The spruce bark beetle, *Ips*



typographus, is widespread in northern Europe and causes millions of euros worth of damage to commercial spruce forests.

We need to be vigilant to prevent further infestation of our shore, particularly in the area of imported tree stock from Europe.

What are the 'real' threats?

In my opinion there are two principal 'real' threats, i.e.

1. biosecurity or lack of it; and
2. the mindset of the tree industry as a whole.

Biosecurity is not as stringent as it once was for a number of reasons: first, a lack of resources. It's been in the news recently that government cuts have reduced staff levels within the Border Agency, so there is little chance that tree pests and diseases will be prioritised.

Second, the 'single market' across Europe effectively means that any plant imports carrying an EU label are allowed in without much scrutiny.

Finally, the Channel Tunnel has restored the link between the European mainland and the UK that disappeared at the end of the last ice age. It has been speculated that gypsy moth was introduced to the UK through adult moths that were carried in the wheel arches of cars, vans and lorries of visitors and holidaymakers. Although this is speculation, it is undeniable that pests could be introduced in this way.

Furthermore the financial loss to the nurseries that import tree stock from Europe is not often considered. When an independent nursery is responsible for the total loss on an entire shipment destroyed under biosecurity measures, possibly worth tens of thousands of pounds and without compensation, it is difficult to see the incentive to report possible issues.

The forestry industry's proposed initiative to develop a voluntary chain of custody for forest nursery plants is extremely positive. Forest nurseries will be required to adopt the measures if they wish to supply these leading operators with trees in the future. It is hoped that other buyers will also use the scheme and that working together with nurseries will provide buyers with the assurances they need that the trees they are purchasing are free from disease.

It is also hoped that the government will act on its threat to ban imports of trees from Europe.



The effects of horse chestnut leaf miner.

The industry mindset

We know about the pests and diseases; the Forestry Commission and Forest Research keep us informed and provide as much information as they can, but is that enough? How much does having 'the knowledge' help us to control/eradicate any given pest or disease? Let's take Dutch elm disease for example:

1. We knew that the causative organism was blue stain fungus that caused vascular wilt and that it had mutated to a very aggressive strain capable of killing trees within weeks.
2. We knew that the disease was spread from tree to tree by bark beetle vectors, i.e. the large and smaller European bark beetles, *Scolytus scolytus* and *Scolytus multistriatus* respectively; and through root grafts where elms grew closely together and that was the main way it spread through the population of English elm, *Ulmus procera*.
3. We knew that sanitation felling of diseased and dead trees removed the breeding sites of the bark beetle vectors.
4. We knew that controlling the vectors controlled the disease.
5. We knew that poisoning the stumps of felled elms eliminated the systemic spread of the disease through root grafts.

6. We even developed pheromone trapping and the trap-tree methods of control and these did work.
7. We developed fungicides that worked. They were difficult to inject, but they worked nonetheless.
8. Yet we still lost over 30 million trees and gained a changed landscape and are still losing elms today because the disease is endemic!

Millions of pounds were spent on research. We had all this knowledge, and a number of techniques to control the disease, so why did it fail so spectacularly? Why did this natural disaster happen? There was something lacking. That was commitment from the arboricultural industry because, in my opinion, there was more money in removing dead elms than trying to control the disease.

Yes, control was an enormous job in any location; sanitation felling and all that went with it had a huge cost attached but commitment saw it work – in East Sussex around Brighton & Hove for example. The pheromone-baited trap-tree technique was also effective and helped minimise the cost of sanitation felling and that worked, in Washington DC, Syracuse NY and parts of Merseyside, for example.

Is it fair to say that, given the present threats, history will be repeated? Have we learned from the DED experience? Or was that too long ago? Winston Churchill said,



Gypsy moth, *Lymantria dispar*, caterpillar.

'Those who do not learn from history are condemned to repeat it.' Will history be repeated?

New developments

There is a lot of research being undertaken into developing new pesticides and control techniques for some of the more serious pests. For example, a new pesticide for the control of oak processionary moth has been developed and is being tested in London. This is a new compound and it will take some time for it to be approved and licensed for use unless an emergency approval is granted.

The mode of delivery of this and other compounds into trees is by micro-injection, which causes little or no damage to the tree and potentially provides years of protection from a single treatment. Indeed micro-injection valves that are bio-degradable are being developed. This micro-injection technique quickly and cleanly delivers the exact dose of pesticide into the tree irrespective of weather conditions and with no impact on the surrounding environment, as was the case with the spraying approach.

A similar solution is being developed to control horse chestnut leaf miner which is also applied using micro-injection techniques, and the results of the first trials are looking very positive. Researchers at the Royal Botanic Gardens at Kew are also investigating the possibility of bio-controls for horse chestnut leaf miner, but this research is in its early stages.

The possibility of controlling pests such as OPM and HCLM is looking good. There is investment in research and trials are happening. More research and development will happen in the future and it is entirely possible that effective controls for a number of pests and diseases will become available. The question that

occurs to me is what happens then?

What can we do?

Our amenity trees, forests and woodlands are under unprecedented threat from a range of exotic pests and diseases, so where do we stand in relation to those threats and the ideals we espouse? As the tree care industry, can we live up to our often repeated sound bite that we 'care for trees'? Arboriculture is the science of amenity tree management and the principal objective of the Arboricultural Association is: *'to advance the science of arboriculture for the public benefit'*. The Association states that it: *'delivers professional standards and guidance, ensuring responsible management of the trees in our care'* and, for the most part, the Association and its members follow the objectives and ideals.

In the present scenario where we have established pests and diseases and the ever-present threat of others entering the country, it is time for the contracting sector of the arboricultural (and indeed forestry) industry to meet the challenges. In my opinion, the contracting industry should look to establishing pest and disease control divisions, so that they are in a position to offer this as an extended service beyond traditional pruning, felling and planting. It will be an especially favourable proposition for the larger companies that offer services to local authorities, utilities, corporate clients and indeed private homeowners – those companies who have the organisation and

capability to operate a pest and disease control division.

The industry needs to wake up and smell the coffee! If our industry doesn't do this, who will? Commercial pest control firms? Commercial weed control outfits? Anyone holding a PA1 & PA6 Competency? Do we really want this? I firmly believe that this is for the arboriculture industry to control: after all, we are the practitioners of the science of arboriculture; this is for us.

We have largely ignored the concept of tree health care (THC), i.e. preventative care rather than reactive. How many companies offer this service? How many consultants recommend it and/or provide tree health management plans for their clients?

We have ignored pest and disease control – even through DED there were very few companies offering fungicide injections for high value amenity trees. This has got to change! Contractors need to consider tree health care as part of their core business

We have to take ownership of tree pest and disease control. That way it can be undertaken professionally, properly, sensitively, with due regard for the environment and biodiversity.

It's time the mindset of our industry changed. We cannot do much, if anything, about biosecurity, but we can administer control of pests and diseases as new treatments become available. It's up to us to face up to this challenge.



Oak processionary moth caterpillars.