Tree Health and the Landscape – What we need to know?

Report of a one-day seminar jointly sponsored by the LI and Barcham Trees, Ely on 17 October 2013

Between 30 and 60 landscape architects, arboriculturalists and others gathered on a stunning mid-October morning at Barcham Trees, Ely, for this free, all-day seminar, jointly organised by the Landscape Institute Biosecurity sub committee and Barcham Trees. The LI's Colin Moore, contracts guru and long-standing member of the Technical committee and its Bio-security Working Group, topped and tailed a day with three main speakers – David Slawson, the extremely experienced and knowledgable 'Man from the Ministry' in charge of public engagement on matters of plant health at the Food and Environment Research Agency (Fera); the inimitable Keith Sacre of Barcham Trees (think somewhere between Keith Richards and Ronnie Wood with a passion for and encyclopaedic knowledge of trees) and the equally inimitable Alan Simson of Leeds Metropolitan University (we are in Kris Kristofferson territory here, though we didn't hear him sing).

By now, most if not all landscape professionals in the country are at least aware of and worrying about the impact of Ash dieback. But there are other pests and diseases, perhaps less familiar, which are posing real threats to our tree populations. The business of this seminar was to learn about current and anticipated threats to tree health, to hear about responses by government and others and to educate ourselves in best practice. Two photographs on the wall of the venue of the double avenue of plane trees in London's Kingsway, taken 40 or 50 years apart, were a constant reminder of the value of maturing trees on the urban landscape and by implication the huge impact of their loss. Links to the individual presentations can be found on this webpage.

Session 1: Introduction – Colin Moore

In his opening remarks, Colin Moore noted that for many years tree health was not seen as a great concern for landscape architects, it was the business of contractors, nursery producers and, increasingly, importers. Certainly my own experience chimes with that view. With the possible exception of fireblight we generally thought little about tree health during my career in Northern Ireland. Dutch Elm Disease was already rampant when I was a student in the 70s. Although a significant component of broadleaved forest and woodland, elm was importantly a tree of hedgerows, parks and gardens and its loss had a huge impact on the landscapes of the British Isles. That loss was noted and lamented but, Colin suggested, relatively little was done about it because the trees were mainly in private ownership. The ability, will, resources (call it what you will) to replace the estimated 25-30 million trees killed was simply not there. The scattered distribution of our tree populations and the fact of private ownership makes them doubly vulnerable to loss without replacement.

With this previous experience in mind, Colin was concerned that the Government's Chalara Management Plan focuses on forestry and woodland and related industries, such as nursery stock producers, but neglects individual specimens, small groups and hedgerow trees and the enormous landscape and amenity impact that the loss of such trees would entail. This was somewhat disputed by David Slawson in his talk, though a quick look at the Chalara Management Plan suggests that the concern is resaonable. Colin went on to summarise the LI's response to ash dieback and highlighted

AshWatch, a recently launched, long-term photography project to celebrate the tree and record the impact of its loss on the landscape.

Session 2: David Slawson

David Slawson is a plant health scientist and previous head of Fera's Plant Protection Programme. He has worked extensively on Phytophthora control and his current role is to raise awareness of plant pests and diseases through public engagement. He opened by saying that most of the major diseases of the last 10 years arrived in this country before they were known to science or named and then ran through the major pest and diseases already present or threatening. They are listed on Fera's website: http://www.fera.defra.gov.uk/events/chelsea2013/topThreats.cfm

Pests

- Asian and Citrus Longhorn Beetle – not established but already intercepted. Citrus on Acers from China and Asian on wood packaging. We need to be vigilant not just where live trees are concerned but on, for example, wooden packaging on batches of paving. Asian Longhorn beetle poses a serious threat to a wide range of broadleaved trees including maples, elm, willow, horse chestnut, birch and poplar.
- Horse Chestnut Leaf Miner – widespread in England and Wales
- Oak Processionary Moth – London and Berkshire
- Pine Processionary Moth

Diseases

- Chalara Ash Dieback
- Acute Oak decline – present in the Midlands, south-east England and parts of Wales
- Phytophthora ramorum – present since 2002, attacks a wide range of trees including rhododendron, camellia, viburnum and bilberry. Japanese larch is also a host and is being widely felled
- Phytophthera kernoviae – attacks rhododendron, bilberry and beech.
- Dothistroma needle blight – affects a range of conifers, weakening and reducing yields

Government-sponsored actions to date include the Tree Health and Plant Biosecurity Action Plan (Oct 2012), the Chalara Management Plan (March 2013) and the Tree Health and Plant Biosecurity Expert Task Force Report (May 2013) and Fera's website provides links to all of these as well as best practice protocols, videos etc. http://www.fera.defra.gov.uk/plants/plantHealth/treeHealth/

Plant movement and inspection

Plant movement within and beyond the EU is a big issue in all of this and the landscape industry is largely outside the plant health inspection regime. David reminded us that currently plant passports only apply to controlled species (species that are viewed as serious risks for the introduction of pests and diseases) within the EU. The plant health regulations are enforced by Fera's Plant Health and Seeds Inspectorate, which has about 100 inspectors to cover England and Wales with the largest team located at Heathrow. Scotland and Northern Ireland have separate but similar arrangements. The vast majority of the plants that we specify are not defined as controlled species and therefore when they are moved between EU countries have little or no interaction with the inspectorate.

There is however a major European review of plant passporting under way and David expressed the hope that passports will be extended to all plant material. The dangers of rootballed or containerised stock were highlighted with a striking slide of an enormous, apparently healthy, Rhododendron 'Cunningham's White (£7000-worth) with a huge rootball being loaded into a shipping container. Apparently it was brought into England from the Continent for a famous (but discreetly unnamed) individual, succumbed to Phytophthora and had to be destroyed. How many of us have honestly given serious thought to the biosecurity risks of rootballs and containers which come with an entire ecosystem embedded?

Other measures

Measures to improve the situation on the government side of things, apart from the plant passporting mentioned before, include a supply chain assurance scheme (under development), greater use of the Protective Zone Status (successfully used against Colorado Beetle), a Pest Free Places of Production scheme for nursery stock growers (in discussion), and a public awareness campaign to get us all to take simple hygiene measures seriously. When moving between sites the advice is to wash footwear, any tools used and vehicle tyres before leaving each site. On the theme of disease transmission, and informed by his expertise on Phytophthora, which thrives in water bodies and damp places, David illustrated simple design and management measures, including grass margins between plantings and access roads, to keep leaf litter away from contact with foot and vehicle traffic. He also advocated 'quarantining' ex –UK plant material wherever possible and for as long as possible, offsite, or in a separate area of a site or nursery. Fera work closely with the Forestry Commission and they jointly sponsor the OPAL tree health survey, which is designed to involve the general public in information-gathering, http://www.opalexplorenature.org/treesurvey
David commended The FC's tree health training days as well as their published advice on plant heath and biosecurity measures
Research & advice: http://www.forestry.gov.uk/website/forestresearch.nsf/ByUnique/INFD-5STC8A
Training: http://www.forestry.gov.uk/fr/INFD-5ZM9UN

Session 3: Keith Sacre

Keith Sacre started with the news that he was cramming the content of three one-hour talks into 60 minutes. Part one focused on our urban trees and while acknowledging the importance of individual trees, he emphasised that it is populations of trees (rather than individual specimens) that deliver the real benefits and stressed the importance of species choice. He invited us to think about urban areas as buildings in a forest rather than the other way round and lamented our lack of knowledge about our urban tree populations other than that about 70% are in private ownership. Software such as i-tree is beginning to offer ways of quantifying the benefits (set at $122 per annum per tree by New York City), but if we don't have a clear idea of the numbers, species, age and condition of our urban trees, how can we assess their value to the community or work out a robust strategy for their long-term management and succession?

Species selection

When it comes to species selection, he worries about the small group of 'reliable performers' that specifiers resort to time and time again, whereas there are a wealth of other possibilities yet to be exploited lurking in our botanical gardens and arboretums. He noted Alnus hirsuta var. sibirica and

Quercus robur 'Filicifolia (Edinburgh Botanic) as potentially good street trees and encouraged us to look at some of the more unusual genera already commercially available. Keith added another disease to the watch list, Ceratocystis fimbriata, or Plane wilt, which is on the move northwards through central France and we were bleakly reminded that the use of groups and avenues of a single species is inherently vulnerable - remember those photographs of Kingsway.

Lack of genetic diversity

Another concern was the nursery stock industry's reliance on clonal production – a good clone is convenient, it produces identical stock and waste is minimised, but if a pathogen or pest turns up to which that particular clone is vulnerable, then everything is lost. He picked out Pyrus calleryana 'Chanticleer' as one example of just such a selection.

Climate change

Climate change and shifting weather patterns will affect the selection of trees in years to come. To this end Swedish researcher, Henrik Sjoman, who gave a seminar at Barcham earlier this year, has done a thesis on 'Trees for Tough Urban Sites'. Sjoman is working with the Swedish nursery industry to source and evaluate trees that will thrive in Sweden in the future, collecting in the Caucasus, Appalachians and China. His thesis is available on request from Keith as a pdf.
Keith@barchamtrees.co.uk

BS 8545 Trees: from nursery to independence in the landscape – Recommendations

The second part of Keith's presentation was a brief roundup of the impending BS 8545 on which he has taken the lead with support drawn from the landscape industry and professions. In an era when we must work hard to ensure the resilience of our tree stock, with good successional planting, he maintains that we must not tolerate the current 23-24% rate of loss of young trees in urban areas (*Trees in Towns II, 2008*) Alan Simson later suggested that the percentage might be considerably higher, more like 38%. BS 8545 is designed to revise and bring together existing standards on the production, despatch, storage, transplanting and maintenance up to the point of independence of trees in the landscape. It is at draft stage, public comment is complete and issue is programmed for late 2013/early 2014, but Keith will provide a copy of the draft to anyone who contacts him.

Benchmarking tree health

Lastly Keith spoke about work that Barcham as a business are doing on tree health and environmentally responsible practice – as he said himself, an unashamed bit of promotion, but no less relevant. Although the use of peat-based composts is still widespread in the nursery industry, Barcham have developed a peat-free growing medium, based on a green waste, thereby eliminating one variable in the bio-security supply chain. They are also actively developing a simple field-testing tool linked to a database to allow easy physiological assessments of trees. Currently any checks that we as, for example, contract administrators do on a tree are visual, morphological ones. Unless there are clear signs of disease or infestation on the foliage, root or bark, we are unlikely to pick up problems and, if we do, we have to send samples away for testing. The on-site tool being developed by Barcham tests tree condition using leaf fluorescence, chlorophyll content and electrolyte leakage taken from single leaves. The results will be able to be compared against a database, built from their own stock which has been independently assessed for health by the Bartlett Tree Laboratories. Still undergoing development, this tool may be commercially available in future. Another simple tool

which tests for Phytophthora in the field was mentioned by David Slawson and is already commercially available from Foresight Diagnostics: http://www.forsitediagnostics.com/news/17

In answer to questions, Keith was strongly pro Gator bags as a way of delivering a known volume of water at known intervals to establishing trees and also strongly advocated the use of informal quarantining of imported stock. He gave the example of RBGKew, which buys plants from around the world but holds everything offsite for at least one year before bringing them into the gardens.

Session 4: Alan Simson

Alan Simson gave us a lively and impassioned plea for green liveable cities, in an era of globalisation, social exclusion, and huge challenges for urban governance and our urban environments. Illustrated with a great selection of images from around the world, he name-checked everything from Copenhagen's response to its flooding in 2011, to the Hundertwasser Haus in Vienna, by way of the High Line, Emschertal, Amsterdam and Battery Park. The economics of trees versus grass (trees win hands down), the value of urban greening to the economy (the High Line is estimated to have brought in $2 billion on either side of it), the modifying effects of trees on downdrafts from tall buildings, the sheer innovative delight of the Hundertwasser Haus. It was a rollercoaster of a ride and there was time for trenchant criticism of our failure to date to organise utilities into trenches, freeing space for trees, to note that urban trees in Holland routinely have 25m^3 minimum of growing medium and to remind us, coming back to that theme of resilience that it is prudent in any given area to have a mix comprising no more than 30% of any family, 20% of any genera and 10% of any species as a way of promoting resilience. He illustrated the value of trees in creating comfortable, inclusive social spaces, vital to our health and well-being, but reminded us that in a multi-ethnic country, we must be aware of and provide for a wide range of cultural values and preferences. He finished by saying that Leeds have stopped referring to green infrastructure in favour of integrated infrastructure – one to ponder.

Session 5: Colin Moore

In bringing the day to a close, Colin Moore left us with a few uncomfortable thoughts: he reminded us that the hedges of the Midland Plain were once made up of more than 30% each of elm and ash, with the balance being mainly oak. In excess of 60% of those hedgerow trees are gone or doomed (on present estimates) and that's without incorporating the threats to our oak. He noted that it is perfectly possible for nurseries to treat diseased plants to suppress physical signs of disease that only become apparent after planting. He felt that a big, endemic problem with improving biosecurity standards was the poor state of the nursery industry in the UK and he reported that landscape architects are seen as a high risk group because we specify imports that have minimal contact with the official plant health inspection regime. Finally he asked for interested individuals to lend their support in whatever way they can to the LI Biosecurity Working Group.

For information:

Barcham have been running their own seminar series for many years and, for those members not already aware of it, this free series provides valuable CPD opportunities on a wide range of topics associated with tree production, supply, establishment and management.
http://www.barcham.co.uk/seminarnews.

Report by Sally Visick, MA DipLD CMLI

The LI Biosecurity subcommittee will be organising more such events around the UK.