The London Tree Officers Association
Caring for the Capital's Trees

LONDON TREE OFFICERS ASSOCIATION

London Tree Officers Association (LTOA) Position Statement (revised 2nd edition January 2017)

MANAGING THE THREAT TO LONDON'S TREES FROM PESTS AND DISEASES

BACKGROUND - THE THREAT & OUR RESPONSIBILITES

A key objective of the LTOA is to '*Improve the health, increase the extent and guarantee the resilience of London's tree canopy*'[1].

Despite the many positive changes, and increases in awareness, understanding and practice in recent years in relation to our natural heritage and care for our environment, we are beset everyday by greater threats to the ecosystem we inhabit.

The LTOA is responsible for much of London's tree population, a fundamental part of the environment, and the keystone species that support humans and wildlife and interconnect the entire city's natural and physical processes, its water, soil and the very air we breathe.

We are increasingly informed about the importance of our tree canopy for air conditioning, and managing water, soil and drainage systems, the effectiveness of which is essential to the quality of urban living. The increasing risks of new pests and diseases to London's trees, if unchecked, threaten the canopy and skyline as we know it today.

[1] The Constitution of the London Tree Officer's Association (revised September 2013) Section 2.1

The prospect of such declines and losses places a clear responsibility on government, municipal managers, LTOA members and the public to invest in protecting our trees if we are to secure and enhance their contribution and continuity for the benefit of city life.

This position statement reflects current concern about a number of significant pest and diseases threatening the health of London's trees, including:

Acute Oak decline (AOC)
Canker Stain of Plane (CSP) *Ceratocystis platani*
Chalara Ash Dieback (CAD) *Hymenoscyphus fraxineus*
Horse Chestnut Leaf Miner (HCLM) *Cameraria ohridella*
Massaria Disease of Plane (MDP) *Splanchnonema platani*
Oak Processionary Moth (OPM) *Thaumetopoea processionea*

The LTOA therefore contends it is fundamental not only to defend our trees against existing and new pest and diseases, but to strive positively to ensure the health and resilience of the tree population, as this will determine the quality of the urban experience, secure the services and attractiveness trees provide for people and wildlife, including the economic well-being of London and its inhabitants.

BIOSECURITY – BACKGROUND AND CONTEXT OF RISKS TO OUR TREES

Today the term biosecurity[2] has come to include non-malicious threats (including those from inadvertent human-agency and other causes) due to newly emergent disease outbreaks and epidemics that threaten human health and environmental processes, and the fabric and economy of society, i.e. the capacity for sustainable living.

Nationally risks are posed to our trees from infectious diseases and pests. These are increasingly from invasive alien species. In 2012 the threat to our native ash trees from the introduced pathogen Charlara Ash Dieback (CAD) was considered a national crisis, sufficiently great to warrant convening the UK government's emergency committee, the Cabinet Office Briefing Room (COBRA) due to fears of an epidemic resulting in massive native ash population losses, and cascading effects upon the ecosystem, economy and landscape.

These pest and disease concerns are a great cause for anxiety, as they are indications of the accelerating impacts from globalisation, climate change and declines in biodiversity upon our flora and fauna. The LTOA believes that our own region faces real and increasing environmental threats. Few today would fail to understand the biosecurity danger from new pest or disease introductions that cause tree health and population declines owing to the fact that natural protections, immunities or other limiting mechanisms are absent in our native and naturalised trees. As with the loss of our elm population, the public imagination has been challenged to consider a landscape without ash trees.

Biosecurity threats come in many forms from a number of causes. Human global traffic and intense levels of international trade with materials containing pests and diseases are a potential 'Trojan horse' for new pathogen introductions. This, compounded by changes in weather patterns and temperature ranges or unseasonal events can challenge the capacity of our ecosystem to function sustainably and therefore its capacity to support us. While increasingly recognised and studied, the long-term implications of these effects are poorly understood.

Such changes offer opportunities for organisms that have not been present in our islands in the past. Some may be the species we shall need in the future, to accommodate ourselves to change. Some are not so welcome. The frantic pace of increasing exchange, demand and movement of people and products around the world is delivering numbers of new species to our shores, some of which will thrive within what until recently has been a reasonably stable and sustainable ecosystem.

It is the contention of the LTOA that organisms that are already stressed will be at greater risk from new pathogen introductions.

[2] Koblentz, G. D. (2010). *Biosecurity Reconsidered: Calibrating Biological Threats and Responses*. *International Security* **34** (4)

Our scientific and professional knowledge is inevitably challenged, often lagging behind and reactive in the face of confronting the threat from biosecurity risks as new pathogens are found. There is a need therefore for research directed to trees *and* their diseases, anticipatory studies such as when two diseases synergise, and the disease consequences arising from tree-related stresses through drought, waterlogging and pollution ill-health.

LONDON'S GEOGRAPHICAL POSITION AND GLOBAL CAPITAL

As is often the case London is a barometer of such global transit - movement into, out of, and within London is supercharged in comparison with many other UK areas. The urban heat island effect of the metropolis, though unconnected to global warming, accentuates extreme high temperatures[3]. Our location close to continental influences exacerbates these effects, and the south-east, as in the past, is the first port of call for many an invader from the European mainland, whether borne on the wind, containerised or hitching a lift on homeward bound military vehicles –the suggested route taken into the UK by the Horse Chestnut Leaf Miner.

Cultural, media, governmental & non-governmental contributions to integrated tree disease control

The incidence of new pests and diseases has grown since the turn of the 19th Century and accelerated more recently with the rapidity and increase in world trade, such that we are now faced with pest and disease introductions that present real, current biosecurity threats to our tree stock. This raises a pressing need for a better understanding of disease processes and pathways of introduction and how to protect and improve resilience in the tree population.

While the discovery of CAD in the UK was a dark cloud, it proved to have a silver lining as, for the first time a serious tree pathogen not only hit the headlines it resulted in unexpected, realistic positive actions with the political class working with nature conservationists, academics and tree professionals.

While the outcome is yet uncertain, a precedent has been established for UK governmental agencies DEFRA[4], Fera[5], the Forestry Commission and Natural England (and equivalent functions in the devolved administrations) to cooperate with NGOs, academic institutions, and laboratories. By exchanging disease intelligence and research, funding is being strategically targeted to achieve common objectives. As a result we have a better informed public, engaged in tracking the disease progression. It is early days with Chalara ash dieback, but this integrated approach improves our prospects for enhanced disease alert and control strategies, a model that should be extended to all other great threats facing our urban forest.

[3] Armson, D., Rahman, M. A. & Ennos, A. R. (2013) *A Comparison of the Shading Effectiveness of Five Different Street Tree Species in Manchester, UK*. Arboriculture & Urban Forestry 39(4)

[4] Department for the Environment, Food and Rural Affairs
[5] The Food & Environment Research Agency

CURRENT DISEASE THREATS TO LONDON'S PLANE TREES – CASE STUDY MODELS

Massaria Disease of Plane (MDP)

London Plane (*Platanus x acerifolia*) is unarguably one of the most significant tree species in London. As the tallest and one of the most planted trees in the centre of the city, it contributes perhaps more than any other species to the attractive and functional experience of living in the capital.

MDP, a recently identified disease affecting London Plane trees in southern England, was first positively identified in Plane trees in the central Royal Parks in 2007. While its effect is to cause branch shedding that poses a level of risk to the public, it is however considered a low risk to tree health and longevity.

Research into MDP suggests that the fungal causal agent is a 'weak pathogen', an endophyte probably coevolved with *Platanus* that is normally connected with 'natural pruning' processes that cause twigs and small branches to fall (cladoptosis), a phenomenon likely associated with water regulation. In persistent drought conditions and elevated mean annual temperatures, the fungus appears to cause decay and failure in larger-diameter drought stressed lateral branches, rather than just those normally-affected, small-diameter branches that characterise the typical behaviour of the fungal interactions with the tree.

London Plane, (a vigorous hybrid of both *P. orientalis* and *P. occidentalis*) is well-adapted to polluted urban environments, which has contributed to its success and abundance in London for over 300 years. Nonetheless, London Plane has a predisposition to drought stress during protracted dry spells, a factor thought likely to influence its susceptibility to MDP. To address concerns about MDP the LTOA launched a comprehensive guidance document in December 2013 and has provided a position statement[6] together

[6] http://www.ltoa.org.uk/resources/massaria-disease-of-plane-mdp

with guidance on symptom identification and recording, as a basis for reasonable management (LTOA 2013)[7].

New disease threatening London Planes - Canker stain disease of plane

Ceratocystis platani (canker stain of plane; plane wilt) is a fungal pathogen affecting *Platanus occidentalis* (American plane), *Platanus orientalis* (Oriental plane) and the hybrid *Platanus x acerifolia* (London plane) and is considered to be one of the most significant threats to the species. Thought to be indigenous to North America, it is also in Europe and is present in Greece, Italy, Switzerland and France. *C. platani* is not known to be in the UK.

Symptoms of *C. platani* include sudden wilting of foliage on a single branch which can lead to more extensive crown dieback. The pathogen is characterised by desiccated leaves being retained by the tree. Sunken lesions can be observed in thin-barked trees, whilst in trees with thicker bark the cankers may manifest themselves as vertical cracks. Planes with a stem diameter of 30-40cm can be killed within 2-3 years, whereas larger trees may take 4-7 years to die. A more detailed explanation of symptoms can be found on the LTOA website.

C. platani spreads via spores or mycelium, infecting wounds in stems or limbs or via root contact between neighbouring trees. The principal vector from tree to tree and from one population of planes to another is believed to be infected equipment, spreading the spores from diseased to unaffected trees. UK arborists working in affected countries should be aware that clothes and climbing equipment should be washed and dried before reuse and pruning tools such as chainsaws and hand saws should be thoroughly cleaned of all organic material and disinfected before returning to the UK. There is also a risk of importing the disease through infected saplings (particularly semi-mature specimens) or plane timber.

Since October 2014 the United Kingdom has held EU Protected Zone Status (PZS), allowing robust controls on importing planes for planting and ensuring that planes can only be imported from other areas which have been designated free of *C. platani*. In order to maintain PZS the UK government are required to demonstrate that they are actively looking for the pathogen and that it has not yet been found. In 2014, 2015 and 2016 the LTOA has undertaken the *Ceratocystis* PZS surveys for the Forestry Commission. Thus far there have been no confirmed findings of the disease in London. More detailed information about the *C. platani* PZS surveys is available from the LTOA.

If *C. platani* were to establish itself in London then there would of course be significant implications to the plane population of the capital and, due to the huge importance of this species, to the urban forest as a whole. This is undoubtedly a serious risk which must be given adequate consideration. However, it is equally important not to spread unnecessary panic. The arboricultural industry – led by the tree officers of the LTOA and our partner organisations such as the Forestry Commission and Forest Research – is actively seeking to ensure that *Ceratocystis* is not in the UK. If it were to reach this country then contingency plans are in place to take appropriate steps to deal with the problem as swiftly and effectively as possible and to ensure that the risk of establishment and spread is kept to a minimum.

Bacterial leaf scorch

Xylella fastidiosa is a bacterial leaf scorch disease transmitted by xylem-feeding insects which can affect a wide range of amenity tree species including Platanus (plane spp.), Quercus (oak spp.), Liquidambar styraciflua (sweet gum), Ulmus americana (American white elm) and Ginkgo biloba (maidenhair tree). It also affects economic hosts such as grapevine (as Pierce's disease of grape) and citrus species (as citrus variegation chlorosis).

Symptoms of *X. fastidiosa* manifest themselves differently in different host species, but typically feature as scorch-like symptoms at leaf margins, with the affected regions appearing curled and brown, edged with yellow or red tissues. Scorched leaves tend to drop from the distal and not the basal end of the petiole, leaving bare petioles attached. Other symptoms include defoliation, shoot dwarfing, dehydrated

[7] http://www.ltoa.org.uk/documents/cat_view/116-massaria-disease-of-plane

fruits, irregular patches of brown and green tissue and reduced growth. Heavily infected plants may die within one or two years.

In mid-October 2013 *X. fastidiosa* was detected in southern Italy on Olea europea (olive). In July 2015 France reported the first detection of *X. fastidiosa* in Corsica. The bacterium was detected in a commercial area in Propriano on ornamental plants (*Polygala myrtifolia)*. **In october 2015** the French Ministry of Agriculture confirmed the detection of *X. fastidiosa* on the mainland, in the municipality of Nice (Alpes-Maritimes) in one *Polygala myrtifolia* plant. Reports from Germany in April 2016 are that they have the first identification of a plant sample found positive to *X. fastidiosa* in the territory of Germany on one potted oleander (*Nerium oleander*) in a nursery in Saxony.

The LTOA have been actively looking for symptoms of *X. fastidiosa* as part of the PZS *C. platani* surveys. As of September 2016 *X. fastidiosa* has not been positively identified in the UK.

MATERIAL AND OTHER COSTS OF DISEASE THAT MIGHT RESULT IN MAJOR POPULATION DECLINES

The cost of losing London's Plane tree population

While Massaria is a weak pathogen and its effects long term may not be too damaging if managed appropriately according to LTOA guidance, *Ceratocystis platani* will have a greater impact.

The worst case therefore would be devastating for London. The costs would be astronomical in lost tourist revenue, loss of enjoyment of the streets, great parks and squares of London, of the vast carbon storage and carbon sequestration, and of the absorption of atmospheric pollutants.

While in such circumstances there might be talk of replacing London's Plane tree asset, the reality would be different. In considering the sheer cost of starting again to achieve a true replacement that would likely take two centuries to achieve, focuses the mind on the true value of London's Plane tree population. While political intentions may be positive, attention to problems, timescales and budgets tend to be short term, all of which gives little confidence that once major losses were to occur, there would be concerted long-term effort to restoring the quality and extent of the urban forest to its former healthy condition.

Biodiversity

The biodiversity consequences of losing the habitats, which trees provide is the focus of a recent Ancient Tree Forum publication[8], which points out that ecosystems are hard to describe and define by virtue of their complex, ever-changing relationships involving interacting species. Therefore we can only speculate on the importance of severe decline in a tree species. This means that there is a need to consider not only population declines across age classes, but also the particular loss of mature and veteran trees should be taken into account including impacts upon their associated flora and fauna, and soil ecosystem.

When investigating the incidence and threats from new pests and diseases studies should not only consider above ground tree condition symptoms, but should also consider the soil rooting environment, its microbiology including mycorrhizal condition and chemistry status, as the soil environment also constitutes a major part of the ecosystem and biological diversity.

NECESSITY TO CONTROL THE IMPORTATION OF PATHOGENS INTO THE UK[9]

The LTOA believes that key to protecting the core of the natural asset that is London's tree population from pest-and disease-related declines is, as far as practicable, to move from reactive to proactive approaches.

Proactive protection will require developing methods and coordination to anticipate probable new pathogen and pest introductions, by means of identifying the highest biosecurity risks and prioritising protection of the urban forest against them. This approach will likely involve scenario setting ('what if',

[8] ATF (2014) Position Statement on 'Managing the Threat to Ancient and Veteran Ash Trees from Chalara Ash Dieback'
[9] This is in accordance with the ATF views developed with regard to Chalara ash dieback

based on reasonable assumptions of anticipated pathogen introduction pathways) and coordinated approaches to managing identified high risks that would have severe consequences.

Importance of Communication

Communication and sharing of information is fundamental to the successful implementation and management of biosecurity measures, and the protection of London's Trees. Biosecurity measures will only be successful if all the various organisations involved and government departments are working together in a spirit of cooperation and collaboration.

The LTOA believes that:

- there needs to be appropriate investment in tree disease protection to secure the sustainability of urban forest tree populations
- the short termism that, in austere times, budgets must suffer needs to be challenged as the UK population and business are sustained by the health, well-being and ecosystem processes provided by trees
- local authority tree budgets to support and enhance tree health, resilience and biosecurity should be set up, ring fenced and protected
- funding commensurate with the potential environmental and economic losses is required for research programmes
- plant health risks currently facing the UK's trees are so severe as to warrant over-arching measures for risk management, based on the urgent need to control high-risk pathways of introduction of numerous pests and pathogens
- the compilation of the Plant Health Risk Register to assess the risks posed by particular alien pests and pathogens is fundamental to an early warning system
- measures that control high-pathogen risk pathways should apply to any pathway that carries a significant probability of bringing one or more high-risk pests or pathogens into contact with any important population of trees in the UK
- a policy of tackling pathways on the basis of pest-specific data would be broadly compatible with the revised (2013) framework of plant health regulation in the EU
- it is essential that decision-makers are guided by the expertise of specialists in tree pathology, entomology and soil microbiology, with world-class, research-based skills.

To address the above concerns the LTOA will:

- develop a Biosecurity Working Party and extend the role of the existing Pest and Disease Working Party
- work with EU and UK government agencies including the Forestry Commission, other NGOs and professional bodies to obtain and disseminate information about pest and diseases and biosecurity
- work in close collaboration with the Forestry Commission, other agencies, NGOs and professional bodies to obtain the best up to date information and share knowledge and expertise.
- strongly support the UK Plant Biosecurity Strategy
- urge that the issue of Biosecurity should be pushed up the political agenda at every opportunity
- encourage the media to focus on this issue and that their information is accurate and evidence based
- continually work to increase knowledge of current and potential Biosecurity threats
- identify and publicise the risks from pests and diseases, threats to the urban forest
- focus initially on the particular threats to London's Plane tree population

REFERENCES

1. Food and Environment Research Agency (2013) *Rapid Pest Risk Analysis for* Ceratocystis platani
2. London Tree Officers Association (2013) *Massaria Disease of Plane – Practical management guidance*
3. Ancient Tree Forum (2014) *Position Statement on Managing the Threat to Ancient and Veteran Ash Trees from Chalara Ash Dieback*
4. *Synonym: Ceratocystis fimbriata Ellis & Halsted f.sp. platani Walter*

5. London Tree Officers Association (2013) *The Constitution of the London Tree Officer's Association*
6. Koblentz, G. D. (2010). *Biosecurity Reconsidered: Calibrating Biological Threats and Responses. International Security*

The Composition of the LTOA Biosecurity Working Party

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