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

LONDON TREE OFFICERS ASSOCIATION

London Tree Officers Association (LTOA) Position Statement

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

The viability of London Planes are currently threatened across mainland Europe from a disease we believe as yet not present in the UK – the canker stain of plane (*Ceratocystis fimbriata* f.sp. *platani)*[8] (CSP). CSP functions as a *vascular wilt*, similar to that of Dutch elm disease (*Ophiostoma novo-ulmi*).

The fungal pathogen enters water conducting vessels, causing barriers and chemicals to be produced [perhaps by the tree itself] inhibiting the flow of water and nutrients to the leaves, eventually causing leaves to wilt and die with potential fatal consequences for the tree.

CSP was introduced to Europe during WWII, since when it has become established in Italy and Spain, and has tracked north through southern France, while also affecting planes in parts of Greece, Switzerland and elsewhere in mainland Europe. The consequence has been dramatic; thousands of mature planes lining the four hundred kilometres of the *Canal du Midi* in Southern France are being felled and burnt every year in an attempt to prevent the transmission of fungal spores.

The Tree Health and Plant Bio-security Action Plan identifies the CSP pathogen as being 'of concern[9]. Once established in the UK, Plane tree populations already abundant in urban forests will be at particular risk of infection, decline and death, and likely result in extensive, costly tree removal, and replacement with resistant species.

The life cycle of a plane tree, as with our native oaks, may span 1,000 years. Given that planes are the largest trees in London, that even our oldest planes may be just in their mature stage, and that the ecosystem services provided by trees increase exponentially with size as trees mature, there is a clear responsibility to maintain the health and well-being of our Planes, to foster their long-term contribution to the urban forest.

It is a sad irony that the origin of London Plane plantings in London was partially due to its capacity to resist atmospheric pollution, and that this tree, that everyone until recently considered to be virtually indestructible, could now be exposed to a fatal pathogen just when the benefits and services it provides are most needed.

The LTOA believes that the losses affecting the London plane population across the capital would be practically irrecoverable for three or so generations, with severe consequences not only for the visual beauty of the city but also for the services London Planes provide to the quality of urban life.

In order to maintain the EU Protected Zone Status - related to the import ban of Plane trees - the procedures require that the disease is not present in the UK. As a consequence the LTOA are assisting the Forestry Commission in carrying out a survey to search for the disease. This survey is now largely complete. Focusing on concentrations of Plane in the London area, it aimed to confirm the absence of symptoms of Ceratocystis platani in our Plane population as the basis for the continued imposition of an evidence based ban.

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* is a true killer, impacting Planes on a par with Dutch elm disease upon the elm population.

[7] http://www.ltoa.org.uk/documents/cat_view/116-massaria-disease-of-plane
[8] Synonym: *Ceratocystis fimbriata* Ellis & Halsted f.sp. *platani* Walter
[9] FERA (2013), Rapid Pest Risk Analysis for *Ceratocystis platani*

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[10], 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[11]

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', 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

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

- 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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